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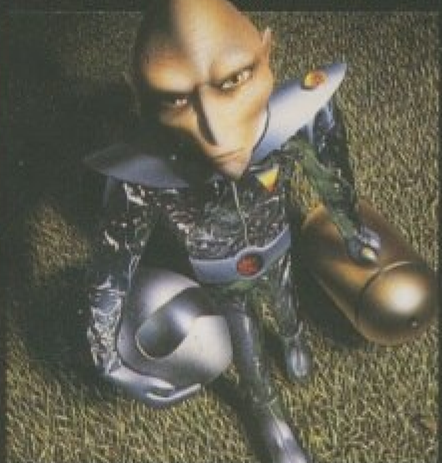
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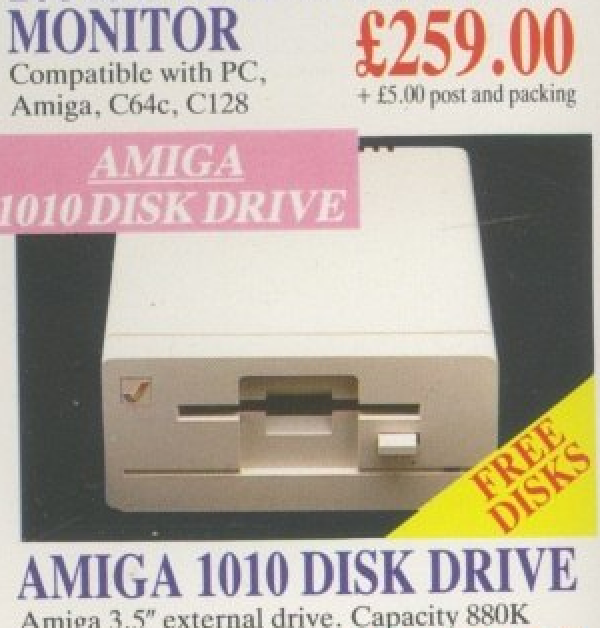
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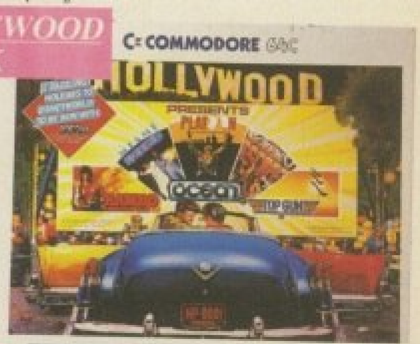
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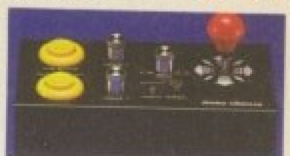




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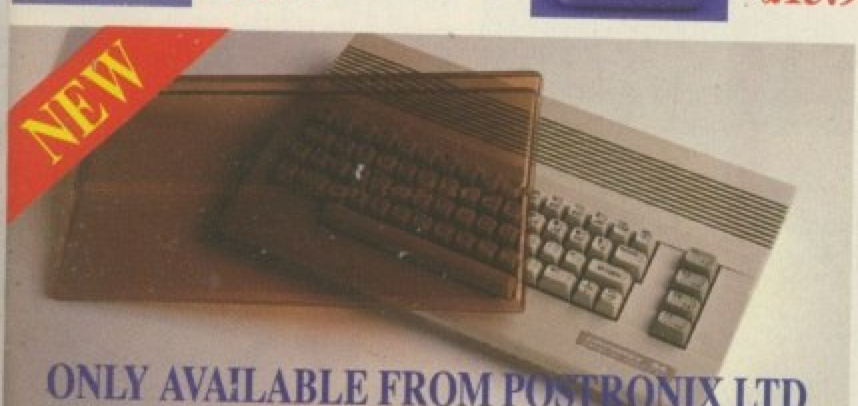
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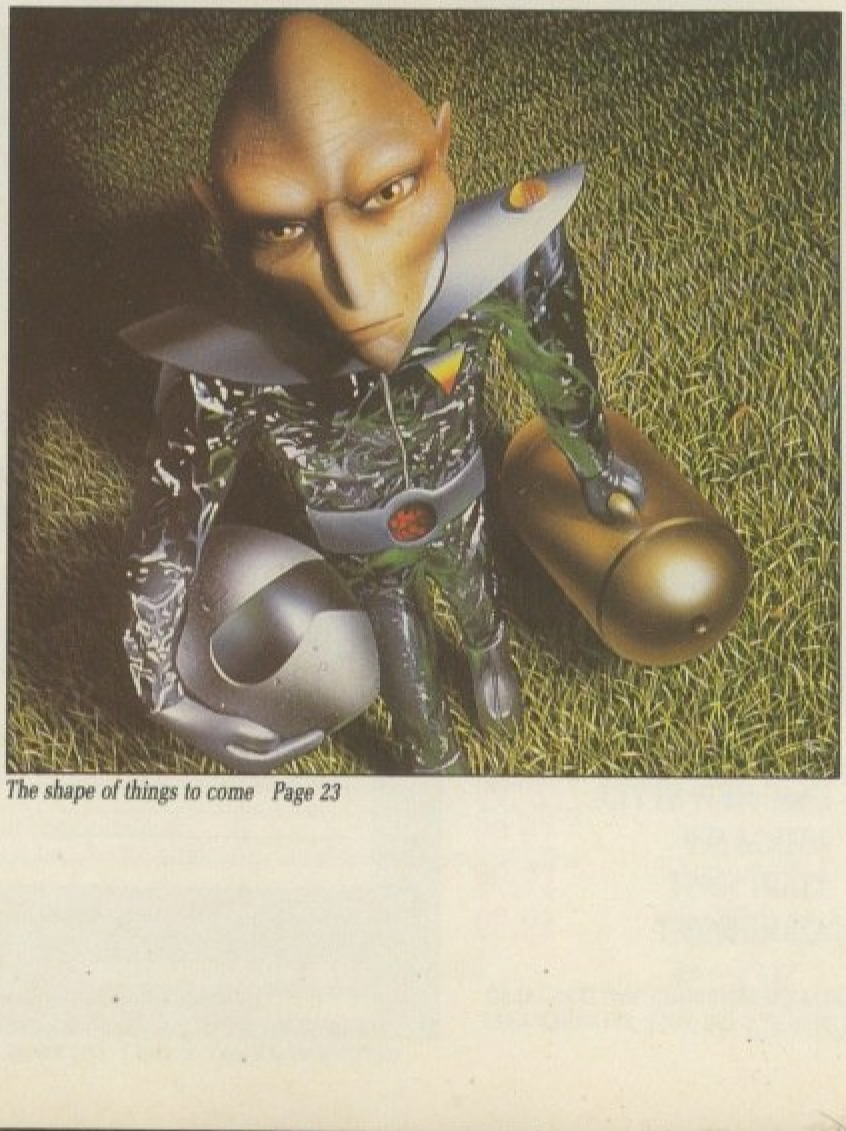
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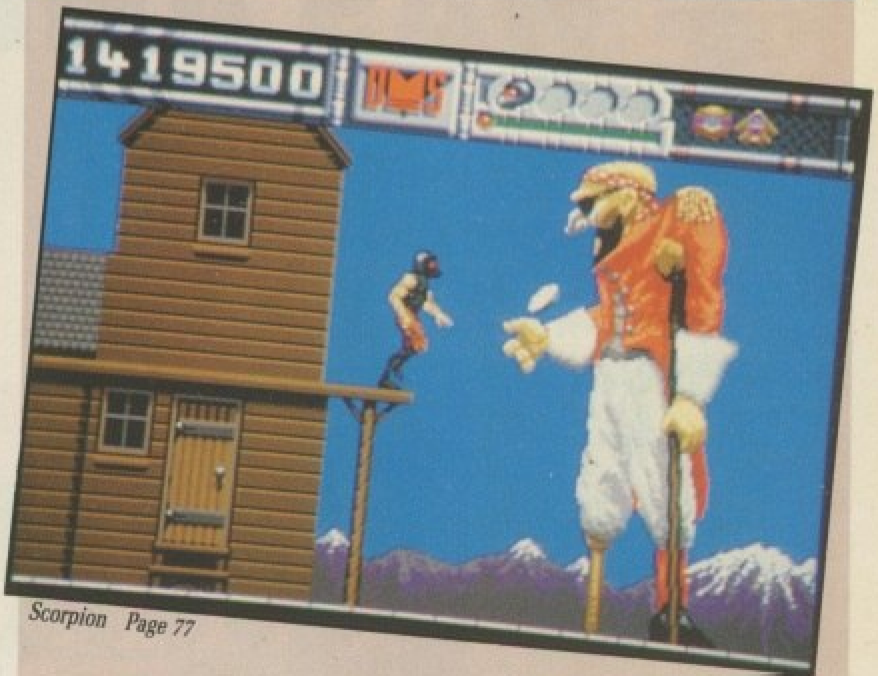




*The shape of things to come   Page 23*



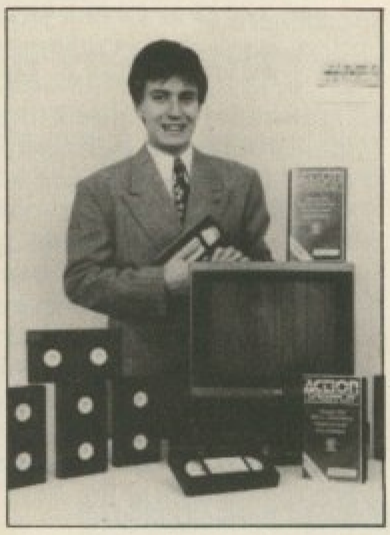
Speed machine Page 86




Scorpion Page 77




LED Storm Page 66



## Video game previews

JON Beales is a man with a mission. He aims to tell the games playing public about new Amiga releases by taping "mini movie" videos and distributing them nationwide.

Through his company Hot Shot Entertainments (0206 751217) Jon is producing Action Screenplay, a bi-monthly consumer video software magazine.

It is the first of its kind in the country.

"I can't think why no one has done it before", said Jon. "Video is such an obvious medium to use for telling people about visual games".

Action Screenplay is on VHS tape and features the up and coming games for the Amiga and other computers.

It differs from the current point of sale videos which can been seen around the country in the major software stores. In true TV traditions, the programme features a presenter who introduces each game category and commentates while the game is running on screen.

Games are shown in four categories – arcade, role playing and adventure, simulations and original concepts.

The tapes include audio-visual effects to create entertaining mini-movies which run for 30 to 45 minutes. They also feature competitions.

Action Screenplay costs £4.99 from software retailers throughout the UK.

# Amiga sifts air crash evidence

IN the aftermath of the Lockerbie air disaster, an Amiga 2000 is being teamed with video to reconstruct the site of the crash so police can work out what happened immediately prior to the accident.

Dumfries and Galloway police have installed a major system based on the 2000. It is helping to process hundreds of hours of videotape taken after the tragedy.

The Commodore system, installed by Glasgow-based Video One Professional Video, allows police experts to produce stills from video material using a digital frame store.

The advanced computer graphic capabilities of the Amiga 2000 are then used to enhance the finished pictures prior to printing out to a Polaroid freeze frame film recorder.

Speaking from the scene of the Lockerbie disaster, Sergeant Bob Ovens of Dumfries and Galloway police said: "The Amiga 2000 system obviously gives us the potential for crime detection by using its excellent graphics and ability to grab video images so we can output them as photographs and slides. We are currently looking at the lessons to be learned from Lockerbie".

To help with solving other disasters, the Amiga 2000 is also being used to produce overhead transparencies for demonstration purposes, as a video titler and for computer animation of incidents. Other police forces using the Amiga 2000 include Lancashire and Preston.

## High spec, low price modem

HI-TECH Supplies has launched a modem for home users which offers facilities only usually found on expensive business products. The EC2400 has four speeds, V21 V23 V22 and V22bis which are automatically selected by "listening" to the system you have dialed.

The modem can dial from a battery backed-up directory using pulse or tone as part of its full Hayes compatibility, and will auto answer, adjusting to the caller's baud rate – which is ideal for setting up your own bulletin board.

It looks good with 11 LED indicators showing speeds, status and ARQ. This last LED refers to the MNP level 5 error correction allowing speed approaching 4800 baud with no errors. BABT approval is being applied for.

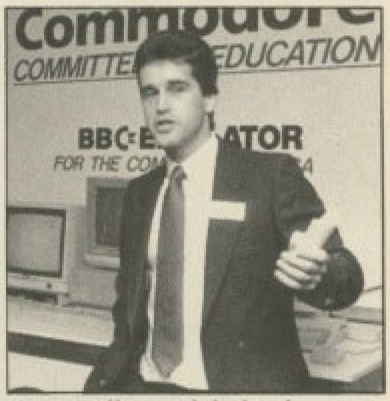
For further details, ring Hi-Tec Supplies on 01-959 6808.

## Win hard discs worth more than £3,000

IDEAL Hardware and *Amiga Computing* are working on an amazing competition which will offer every reader a chance to win one of six System 2000 hard drives for the Amiga 500. This beautifully designed peripheral autoboots without having to upgrade your Amiga.

The high speed 40 megabyte drive would normally cost £573.85, and is a really good buy at that price. But you can kit your Amiga out with one for absolutely nothing.

Full details will be published in the August issue of *Amiga Computing*. Don't miss it.



*Peter Talbot – delighted*

## Boost for Commodore

COMMODORE has pulled off an agreement that could provide it with massive revenue. For the first time the whole of CBM's products are now on the official ordering list of Her Majesty's Stationery Office, used at 11,000 ordering points for government departments and the public sector.

Commodore see this as not only an official stamp of approval but also a guarantee of major sales. Orders were already flooding in within days of CBM's inclusion in the HMSO catalogue.

"We are delighted with the results so far", said Peter Talbot, Commodore's national sales manager for the local government, education and medical division. "The Amiga 2000s are generating interest from departments requiring computer-aided design or audio visual capabilities".

Stan Church, HMSO's IT purchasing manager, said: "We are delighted to take Commodore's product line on board. The company's machines represent faultless reliability at competitive prices".

## Successful joust

LANCELOT, the Arthurian legend game from Mandarin Software (0625 878888), has taken second place in the Best Adventure category of the new Computer Arena Awards. Amiga version of Lancelot costs £19.95.

## COMMENT

WHEN my Toyota was six months old a new model was launched. It had nicer wheels, an electric aerial and a much better radio. I didn't expect Toyota to give me a new car.

And yet when Commodore launched Workbench 1.3 I had a niggling feeling that it should have sent me a copy. Free. Readers who visited the *Amiga Computing* stand at the Commodore Show aired the same view.

But the 1.2 which came with my A500 was perfectly OK. If I wanted the better printer drivers and fast file system I should be prepared to pay for them. The old ones worked; yes the new ones were better, but then wider wheels make a car go round corners faster and an electric aerial is more vandal-proof.

As it was Commodore, and as a rule Commodore are nice people, they priced Workbench 1.3 very sensibly. At £15 it is a bargain, the manual alone justifying the cost.

Business type people regularly hand over £275 to give their IBM multi-tasking and graphics on a system which is buggy and needs 2 megs. If we want Commodore to keep on improving the system we are going to have to pay for it.

Caroline Scheppner and her cronies at Commodore are working on a host of new Amiga products. Some like Workbench 1.4 will work with all Amigas, some, like the new enhanced chip set will be ruled out for A1000 owners, some will only work with Amiga B2000s. This is the price we pay for progress.

Commodore has promised an upgrade path for owners of B2000s. If it launches a new machine with extra facilities, such as autoboot, or a 68030 on the main board, Commodore will also provide a card for the B2000.

Perhaps the best policy is one of reduced price upgrades. This works best with software. Electronic Arts will sell an owner of Deluxe Paint II a copy of Deluxe Paint III for only £30. This not only adds polish to EA's good name, it makes me feel better about buying Deluxe Paint III for £80, because I know that when Deluxe Paint IV comes out there is likely to be a cheap upgrade. Progress can be painless.

**Simon Rockman**

## Educational conferences

COMMODORE is holding a series of one-day educational conferences called EDCO '89. Nationally known speakers from all areas of education are talking on many aspects ranging from Art and Computers in the Curriculum to Local Financial Management.

Each presentation is accompanied by a display of educational systems and products.

The purpose of EDCO '89 is to bring together educationalists, educational users, software houses and developers so Commodore can judge the needs of British education and aim to satisfy them.

The first conference was held at Parkers Hotel, Manchester on April 26. They continue at Stakis Grosvenor Hotel, Edinburgh on May 9 and Barbican Centre, Level Nine, London on June 1.

## Finger on US pulse

MIRRORSOFT (01-928 1454) has appointed Dick Lehrberg as its American representative. Dick, president of Lehrberg Associates, is an international software licensing agent specialising in entertainment and multi-media software.

Lehrberg Associates will be pursuing product acquisition in North America as well as sourcing film and arcade licences on Mirrorsoft's behalf.

Managing director of Mirrorsoft Peter Bilotta said: "I have known Dick for several years and he is the best there is. His work for Activision was astounding and we look forward to having him as our eyes and ears in the United States".

## Covering all tongues

KADOR (0443 740281) has taken its range of Seal'n Type keyboard covers one step further with Keytop kits for foreign languages.

Printed on rigid PVC, the characters come complete with diacritical marks, accents and punctuation symbols and can either be stuck direct on to the keys or Kador's keyboard covers.

Kits for the Amiga are available in French, Spanish, Italian, German, Arabic, Farsi, Hindi, Greek, Hebrew and Russian. They start from £17.50.

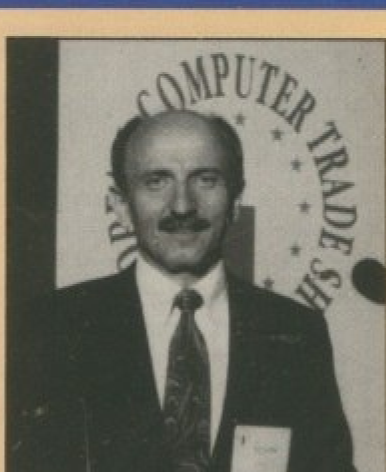
# Micro world welcomes Euro Computer Trade

HUNDREDS of heads were put together in gangways, leisure areas and stands throughout the three days of the European Computer Trade Show held at London's Business Design Centre from April 16 to 18.

Deals were struck, products launched, new contacts forged and old ones renewed by most of the 90 exhibitors including strong contingents from America and Europe.

And the spin-offs from this first trade show can only be good news for end users.

In scenes often reminiscent of the Stock Exchange, business was certainly the order of the three days, unfettered by the usual pressures of public exhibition floors. A large number of new products went on show and there was invariably someone there waiting to sign on the dotted line.



*Antic's Jerry Wolosenko*

This Database Exhibitions event was voted a resounding success. "We regard this as an excellent concept and we will certainly be back again next year", said Joe Oehlmann of Profisoft who had travelled from his German headquarters in Osnabruck.

"The idea of an international show gives us lots of chance to meet people at one time and saves us lots of individual trips. We have also met many contacts that we otherwise would not have met. As far as we are concerned, this kind of show

## MotorMouth on the ball

TIMESCANNER, the new pinball simulation from Activision (0734 311666), had an audience of millions when it was featured on Saturday morning ITV children's programme MotorMouth.

A special part of the programme was given over to tracing the history of pinball from the humble bagatelle game to the high tech electronic pinball table and on again to the computer simulated version available for home computers.

Deborah Cliff, marketing executive with Activision was the driving force in getting Timescanner noticed by ITV.

"We first approached MotorMouth with the history of pinball idea back in December", she said. "They were immediately interested and asked us to do some more research. We then spoke to pinball specialist Geoff Harvey who owns the largest collection of machines in the country. Things just snowballed from there".

On the programme, Geoff talked to presenter Tony Gregory about the features of his machines with Neil Jackson, Activision's Software Producer demonstrating Timescanner on the Amiga.

Photon Paint 2.0 for the Amiga has been launched in America by Microillusions and is to be sold in the UK by Activision for £89.99.

Among enhancements are special animation effects, new wrap functions and alternative drawing sources.

It now offers multiple sweep pages, fill functions, surface and contour mapping and much more.



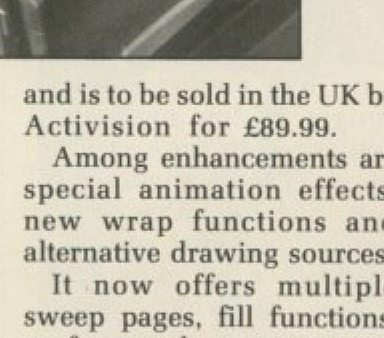
● *Above from left to right on the set of Motormouth are presenter Tony Gregory, Activision's marketing executive Deborah Cliff, software producer Neil Jackson and Geoff 'The Pinball' Harvey.*

## Show

is definitely a must for the future".

Top American visitors were keenly on the look-out for new products. Larry Foster of the world's largest software retailer Egghead Discount Software said at least three hot products would be added to his range as a result of the show.

And Jerry Wolosenko of San Franciso-based Antic said there were certainly many undiscovered gems to be found.



*Egghead Discount Software's Larry Foster*



## JIM BUTTERFIELD reporting from Canada

AMIGA enthusiasts are doing their best to obtain better media visibility for their micro. Computer Chronicles, a weekly television series broadcast nationally in the USA on the Public Broadcasting System, recently devoted its entire program to the Amiga.

The host said they had been deluged with letters asking why the Amiga had not received better coverage in the show.

The half-hour broadcast gave a good cross-section of Amiga capabilities in various areas. There was an initial demonstration of multi-tasking with the Kind Words word processor as a target for material from other sources – text and graphics material were clipped from other tasks and transferred to a business letter.

Graphics were introduced by means of the games Menace and Battle Chess. This was followed by a demonstration of the now-released Deluxe Paint III, whose animation capabilities were emphasised. The program then switched to Florida, where Midi interfaced music was created and played.

An Amiga 2500 appeared in the studio, and the professional video packages AnimEffects and Broadcast Titler were shown. Surprisingly, the studio didn't appear to take a direct video feed for broadcast, instead a camera onscreen shot was used.

★ ★ ★

THERE is reported to be a virus-infested counterfeit version of the most prestigious virus checker, Steve Tibbets' VirusX. The fake version is identified as VirusX 3.3, and can be spotted easily because it does not come complete with source program.

Imitation may be the sincerest form of flattery, but I doubt that Steve will appreciate the gesture. It seems likely that 3.3 will be skipped in the ViruxX numbering sequence.

★ ★ ★

COMMODORE has engaged a new company to do its advertising in the USA. The new campaign kicked off encouragingly with a half-page advertisement featuring the Amiga 2500 in the science section of the New York Times.

Video Toaster, long delayed because of high ram chip prices, was on display at AmiExpo New York. Release was promised for this spring or summer and NewTech was taking orders at the show.

Dragon's Lair is a game renowned for its great graphics. Since its release it has been criticised for having limited play value, but it's still an effective way to impress friends and neighbours.

An interesting effect can be achieved by pressing the Esc, R, L, N and 7 keys simultaneously just as the screen is showing the credits after completing loading.

Arkanoid, too, has a back door. Type DSIMAGIC any time the high score is showing. After that tapping selected keys will cause bonus blocks to drop.

## The fastest assembler

FROM the men who gave you StarGlider comes ArgAsm, an editor and assembler package for the Amiga. The software has been designed to reduce the time spent waiting for a program to assemble. The result is a program which bills itself as the fastest possible on a native Amiga.

Jez San started the program as a hobby. "While I was working on Starglider II the time taken to assemble such a large program started to bug me", he says. "I had some ideas to improve the rate of assembly without affecting the user interface".

The Argonaut team on the program consists of Jez, Fuzzz, PJ and Yakka. They are paying close attention to ArgEdit, the integral editor which claims to offer the fastest scrolling and re-draw rate of any program.

ArgEdit is a fully legal, multi-window operating system based text editor. ArgAsm is of limited use on a 512k machine, only working well on 1 meg, although it is happy with just one floppy because the assembly is done in ram.

The result is an assembly speed 10 times better than HiSoft, and up to 350 times faster than the Commodore Metacomco assembler, yet retaining compatibility with these popular assemblers.

ArgAsm is scheduled for a third quarter release with a price tag set at £59.95. Contact Argonaut on 01-906 3744.

## GFA lands in the UK

GERMAN company GFA Data Media, which produces the Basic interpreter we reviewed last month, has split from Microdeal to provide a better level of customer support and faster translation of their programs. The new company, headed up by ex-Atari bigwig and generally nice guy Les Player, is at GFA Data Media, Box 121, Wokingham, Berks, RG11 9LP.




*At the ESPA launch – (left to right) freelance consultant Simon Treasure, Cheryl Davis of the American SPA, and Andrew Hewson, the temporary chairman*

## Harder line for software

THE UK's top entertainment software houses have joined forces to wage war on software piracy and boost the popularity of computer games.

One year after it was first suggested the Entertainment Software Publishers Association has been formed. It was officially launched at the recent European Computer Trade Show in London.

Its aim is "to radically change the face of the British home computer industry" which it claims will be in everyone's interest including the games playing public.

Main target of ESPA is to improve the popularity of computer games.

"The consequent expansion will be good news for games players because a bigger market means a bigger choice and better products which are more easily available", said ESPA publicity man Michael Baxter.

One way the new association intends to carry out its key aim is through publicising computer games on television and in daily newspapers.

"We want to educate people in the television and newspaper world about the games software industry", he added.

Gathering more market information is another target of ESPA. In the past, software houses have each had their own market research budget which uncovered similar results for each company. The association will now put all subscription money in one hat and use it to obtain a lot more information on what its customers want.

ESPA has pledged itself to support FAST (Federation Against Software Theft) in its fight against software piracy.

This costs the industry millions of pounds which also affects end users. ESPA and FAST will combine to produce a strong publicity drive aimed at persuading games players to boycott pirate software.

The idea of a publishers association was first floated last year at the Computer Arena meeting for the industry in Jersey. It became reality at this year's meeting on Majorca.

## Protext progress

VERSION 4.2 of the best word processor on the Amiga promises to be even better. A significant improvement on the current program, it will have a new manual. One additional feature, is a delete to end of sentence hot key.

Protext V4.2 supports interlace and the productivity modes in the enhanced chip set. The new program will be available in America from Michtron. Contact Arnor on 0733 239011.

## Developers get together

COMMODORE'S Amiga Developers Advisory Board, backed by CATS(UK), is planning a UK Amiga conference, to be held on the weekend of July 8-9.

The venue has not yet been confirmed but is likely to be Nottingham University. Guests speakers will include Gail Wellington and Carolyn Sheppner from CBM International, Rahman Haleem from CBM UK, and representatives of the UK Amiga software houses, including Argonaut, Ariadne, ASAP, Precision and hopefully many others. The conference is open to all comers.

The plan is that day one will consist of seminars on different aspects of Amiga programming, particularly aimed at people fairly new to the Amiga, but hopefully also of interest to older hands.

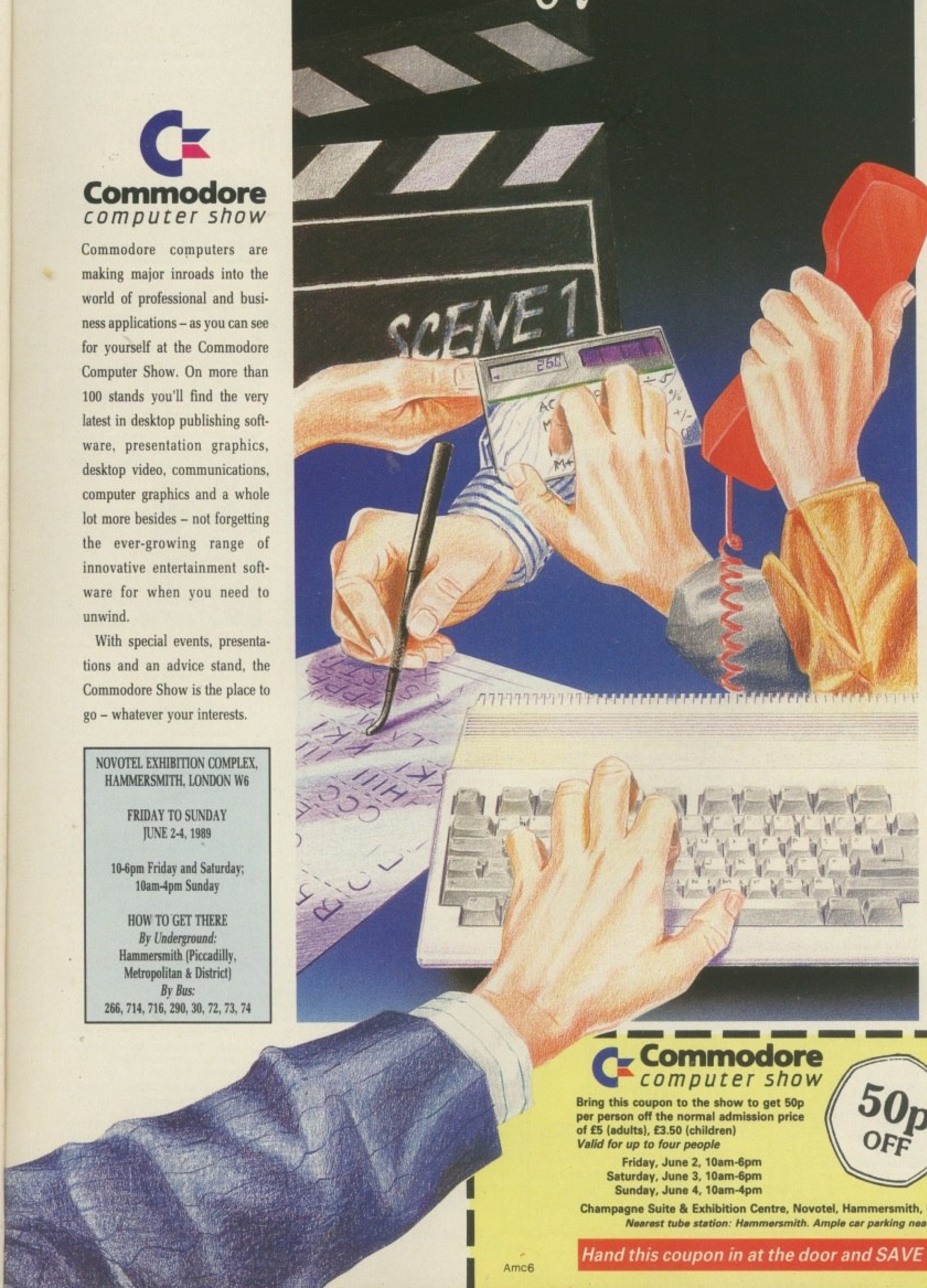
Day two will be a number of seminars on more specialised topics, including deeper looks at the above.

Conference booking is being handled by Ariadne Software on behalf of ADAB and CATS(UK). The price is planned to be under £100 for both days, including accommodation. For further information write to Betty Smith, Ariadne Software, 273 Kensal Road, London W10 5DB.

## Amiga DTP service

DESKTOP Graphics (01-538 9299) claims to be the UK's first Amiga colour desktop publishing bureau with a Linotronic 300 and Postscript RIP2. It provides output facilities for Amiga users providing Amiga files are supplied as either Postscript or Professional Page format. Film or bromide output is also provided and in addition, colour cromalins or wet proofs can be produced from film separations. Typical cost of a single A4 film is £10.92.

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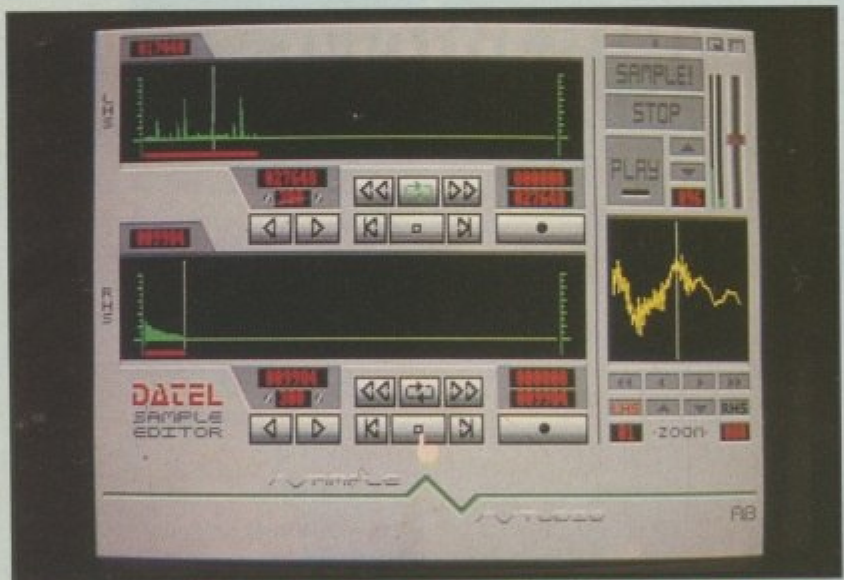
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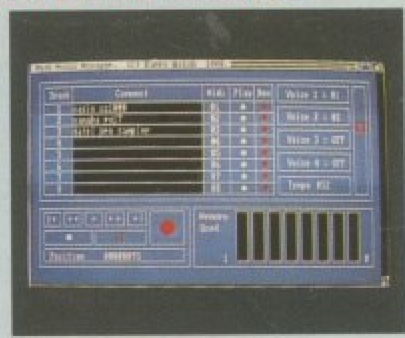
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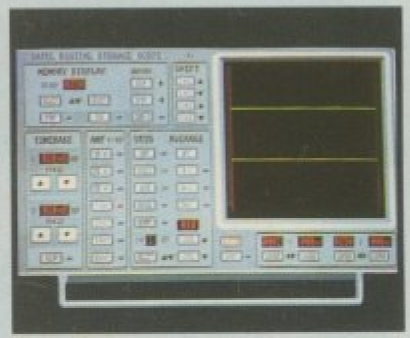
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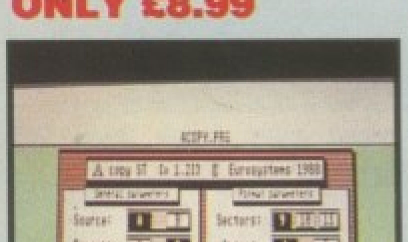
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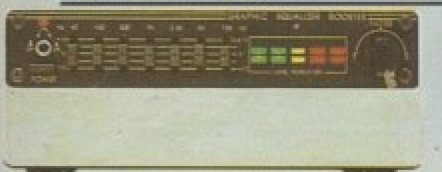
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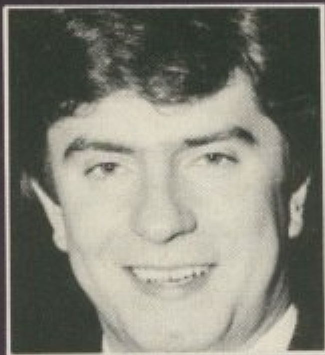
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DEAN BARRETT, the marketing manager of Commodore UK, looks on the Commodore Show as a vital link between the giant manufacturer and its consumers. "As Commodore gets involved in more and more markets, it becomes increasingly important to have a focal point for all its activities", he says. "This is the role we see for the Commodore shows. These events are particularly critical for keeping the ever-growing army of end users informed on the latest developments for their machines.

"The Commodore shows are becoming more vital, particularly to our market strategy. We at Commodore are looking forward to the June show and believe it will be the most successful event to date from everyone's point of view".

Commodore will be taking the main central stand in the Champagne Suite at Novotel to show its latest products. Major interest is expected in the new 590 hard disc which will be there on display only. This 20Mb hard disc is expected to go on sale in the summer with a price tag of £499 and should be a big draw for the more serious Amiga users.


*Dean Barrett: "Vital link"*

Music fans can see what they can do with the Amiga 500, and stand space will also be given over to the extensive graphics capabilities and other facilities of the A2000 – a full range on show for all users.

Games players will not be forgotten by Commodore, which will continue to feature its bundle packs of software for the 64. MSdos-based PCs and lower end machines will complete the lineup.

# New products lined up for launch at show

SALES of Commodore related products have never been so high and a host of treats are in store for the 15,000 visitors expected at the Commodore Computer Show to be held from June 2 to 4 at the Novotel Exhibition Complex, Hammersmith.

Now Europe's premier event for the booming Commodore market, the show will see the launch of many products from software developers, new hardware, utilities, add-ons and the chance to pickup some bargains on special offers through dealer exhibitors.

HiSoft will be using the Commodore Computer show to announce new developments for its established lines, Devpac and Basic, for the Amiga.

A new library of HiSoft Basic called Extend will also be launched. It includes a host of routines to extend the graphics, windows and general capabilities of the HiSoft Basic compiler.

The new Developer version of HiSoft Devpac will also appear at the show. Intended primarily for software houses, this package allows speedy development for Amiga software on one machine. It also allows users to assemble at high speed down a parallel connection and remotely debug running code, giving maximum memory on the target machine. "We will also have some exciting news for C programmers so drop around at our stand. We will be having plenty of fun with lots of special offers and free gifts", said HiSoft's David Link.

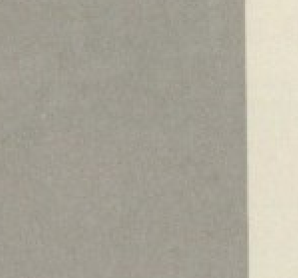
The show will see a first time appearance for a new range of American hardware peripherals for the Amiga A500, 1000 and 2000. These are being marketed in this country by George Thompson Services under the Mast (Memory and Storage Technology) name.

THE Match Box Collection features the Micromeg 512 expansion board for the A500. It comes fully populated with 1 Mb hi-tech zip drams cutting down on power usage and also has a battery backed clock. Also on show will be Minimegs 512k one and two meg external expansion units for the A500 and A1000 which show how the latest technology influences the size of memory upgrades.

The Unidrive and Twindrive floppy drives with many features unique to Mast products will be joined by the Tiny Tiger range of high performance hard disc drives. For the first time anywhere in the world, Mast will be showing the new 50 meg Tiny Tiger.

George Thompson Services will be launching Doslab, a new interactive method of learning about Amigados and the CLI. At £14.99 for the two disc set, this unique program takes into account the years of experience Jumpdisk and

## Busy workshops


*Dr Rahmon Haleem*

HEAD of technical support with Commodore Dr Rahman Haleem is to lead the panel of Commodore experts who will take part in the Programmers Workshop which will be a special feature of the show.

Visitors with an interest in programming will be more than welcome to take part in the workshops, putting forward their own ideas and seeking advice from the experts.

# All your questions answered

NOW a regular feature of the Commodore Computer Show are the question and answer sessions arranged by ICPUG, the Independent Commodore Products Users Group.

This year's June show will be no exception, and the group's committee has been working hard with Database Exhibitions to ensure that the popular feature will yet again be a success.

There will be one hour sessions on each day of the show when members of the ICPUG committee and their panel of experts will be on hand to help visitors with their problems and take part in lively discussion around any topic Commodore users want to air.

"We usually put on a good team of experts for this regular feature of the shows and we intend to do so again", said the group's exhibitions organiser Janet Bickerstaff whose husband John is ICPUG's chairman.

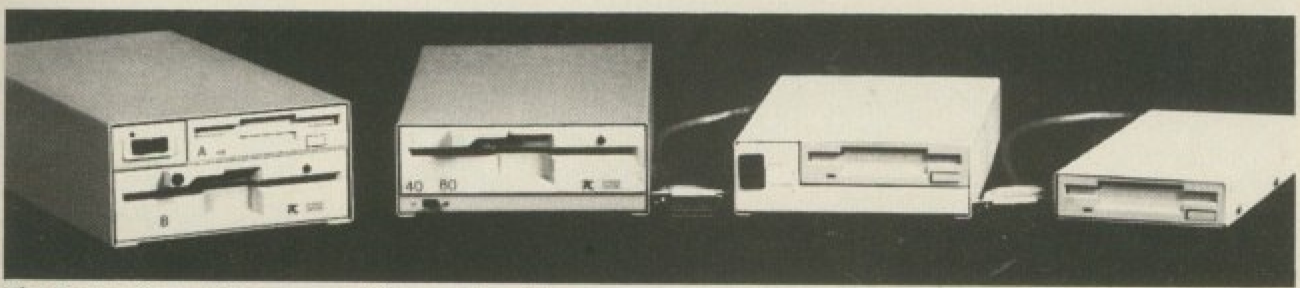
The reputation of ICPUG in the computer world has been underlined by its longevity – last year the group celebrated its 10th birthday.

It all started with the introduction of the Commodore Pet in 1977. In the late summer of 1978, Norman Fox of Hertfordshire published a letter in Electronics Today International asking any Commodore users interested in starting an independent club to write to him.

Membership had grown to 500 by the time of the group's first AGM in August 1979 when a constitution was drawn up.

Over the years ICPUG has compiled a wide ranging software library and has continued to grow to its present status as the foremost Commodore user group in the country. With a pedigree like that, it is little wonder that Commodore Show visitors flock to make use of the wealth of knowledge freely available from ICPUG in the question and answer sessions.

At the June show these will be based in the Salon Bourg, after lunch each day.



*The Power Computing range of floppy disc drives*

GTS have had in helping customers with problems related to the Amiga operating system.

For the first time in the UK show visitors will be able to see the start of a long line of education programs for the Amiga – Mypaint, a paint program just for children. It features sampled sounds for each picture, animated icon drawing tools, special effects and much more.

ANOTHER first from George Thompson is the Media Line series. Yet again due for a show launch, the first three packages of this series are Video and Animation Background 1 for use with all leading animation packages, Clipart Disk 1 which includes a comprehensive selection of one-off graphics for use with DTP packages and Amiga Font Disk 1, a collection of style fonts for video graphics and DTP work.

First day of the show will see the world preview of Ami...Alignment System from George Thompson Services. This is a precision floppy drive head alignment and performance monitoring system for the Amiga range.

At past shows the biggest attraction at the Jumpdisk stand run by Thompsons has been the range of public domain discs offered. "This year a courier will bring the very latest PD discs from the USA just before the show", promised Tony Thompson. "On screen will be a display of the most incredible HAM pictures seen on the Amiga to date, plus a preview of the first comic on a disc".

In the last 12 months Power Computing has emerged as a market leader for peripherals and software for the Amiga market in the UK. At the Commodore Computer Show Power will feature a new software package which it claims will transform the Amiga into the fastest tool for preparing presentations and disc-based demonstrations.

Called Video Magic, it enables Amiga users to take images then add script, sound and animation before saving them on video tape or disc. Icon driven, the package features professional quality wipes and fades, automatic scripting, digitised sound effects, sound sequencing and a remote control handset. It is targeted at the booming personal and corporate presentation marketplace.

Four British designed hard disc drives for the Amiga will also go on show at Novotel. Power's

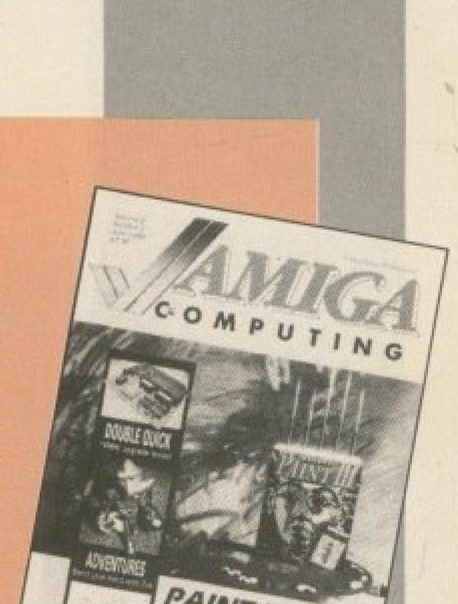
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# Meet the Editors

DO you like what you read in *Amiga Computing?* Would you like to voice your opinions about this and the other leading Commodore magazines? Our editor Simon Rockman and his counterparts on other publications will come under close fire at the Commodore Show in a Meet the Editors seminar which will give readers who visit the show a unique chance to make their views known.

If you're happy with the Commodore magazines come and give them praise and encouragement. If you have good ideas for features come along and share them. If you're displeased with the service, come and get if off your chest.

Either way, Meet the Editors will be a lively part of the show.



Commodore computer show

PREVIEW

# Whole world goes to the big show





Gathering of the fans: Scenes from last y



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Triangle Turbo 3 drives are offered in 20, 40, 80 and 100Mb versions starting from £499. All have auto booting, with 1.3 Kickstart and a second hard drive or floppy drive can be fitted inside the case as an option.

Also to be unveiled at the show is what Power claims to be the first multi-drive to feature Amiga 5.25 recognition. A revolutionary electronic design allows the 3.5/5.25 multidrive to provide complete compatibility through advanced circuitry for Amiga users wishing to upload data from IBM PC and compatible discs. It comes complete with twin track counters, isolation switches and 40/80 track switches for £249.

Rounding off the Power launches at this show will be new 68030 co-processor accelerator cards developed in the USA by GVP. They are aimed at boosting the performance of the Amiga 2000 to that of a high-end workstation.

Amiga owners can now receive free weather satellite pictures beamed from space with an ordinary TV aerial and the latest teletext adaptor from Microtext. To be featured at the show, it allows signals from satellites such as MeteoSat to be received through Ceefax. New pictures are sent regularly and are presented as an index of names on the Amiga's screen. Any can then be downloaded by simply pointing and clicking the mouse.

As well as being able to receive satellite pictures and telesoftware, the Microtext Adaptor enables normal teletext to be received on computer. Features include the ability to print pages, save pages to disc and translate pages to speech.

Mark Tilley of Arnor has chosen this show to display the latest versions of its word processing package Protext. With more than four years

## Beat the Author in arcade action

A REGULAR attraction at Commodore shows is the games arcade where players pit their wits against the latest shoot-'em-ups. This year's June show is no exception but the challenge will be even greater. It will provide the setting for a series of Beat the Author competitions when visitors will be able to take on software writers in an attempt to beat them at their own game.

Contenders young and old will have a chance to show off their skills. They may get thrashed or they may find they are better than the games writers. Either way, it will be fun finding out and swapping tips.





*Scenes fro last year's show*






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development, Protext has progressed with each development being tailor-made to fit new environments.

MAKING his first appearance at the Commodore Show is Brian Levison of Equinox Business Systems. He will be launching the latest additions to his Small Business Accounts packages. SBA Plus adds invoicing, sales and purchase ledgers to the cash book accounting system of the original SBA. The first upgrade, SBA Xtra, added debt and credit control. The Equinox stand should be well worth a visit as these packages are easy to use and designed to take the headaches out of accounting for the small businessman.

Another new exhibitor at the show will be publisher Addison-Wesley of Wokingham that will have on display the Amiga Rom Kernel Reference Manual which includes autodocs. This book contains Amiga C and assembly language including files, function autodocs, IFF documents and provides a comprehensive coverage of command calls. Other updated books in the Amiga technical reference series will be shown, along with computer science titles of general interest to visitors.

Also in the books market is Computer Manuals. Neil Whitcombe will be bringing his full range to the show with particular emphasis on the two Abacus titles, 3D Graphics Programming Guide and More Tips and Tricks for the Amiga.

Diamond Computer Systems will be offering an exchange scheme whereby visitors can trade in an Amiga 1000 for a 2000 with a cash payment of £664 instead of the normal retail price of £1,295. Mike Brown of Diamond also intends

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## Music from the maestro

INTEREST in the Amiga as a music machine is on the increase and visitors to the show will be able to see its full capabilities in the hands of an expert. Colin Gay, one of the country's top musicians will be on hand throughout the three days to demonstrate his skills and answer questions.

Classically trained as a pianist, Colin took part in many piano recitals before cultivating an interest in the use of synthesisers for modern music eight years ago. This progressed to computer-backed music three years ago and he has not looked back since.

Last year Colin played at most of the top computer shows in the country and this will be his third appearance at the Commodore Show. He will be demonstrating his keyboard skills with the Amiga acting as his backing group. A musical treat not to be missed.

Commodore computer show

PREVIEW

# Tips for top games programmers

IN the annals of Amiga games history there are certain names that should be written 10 feet high. Jez San and the Bitmap Brothers are among them and these top games writers will be giving an insight into their art at the June Commodore Show.

How the experts go about creating the games that thousands play will be the essence of the show's Games Workshop with tips and hints handed on to budding amateurs by the men who really know.

Jeremy "Jez" San is head of Argonaut Software and has had a meteoric rise to fame in the games writing world. He started programming at the age of 13 and left school before A levels to join Silversoft, one of the first successful software houses.

His career progressed but it was in 1985 that the big one happened. He was commissioned by Firebird to produce a game in which you flew a spaceship from planet to planet. That was the birth of Starglider, the huge success that sold more than 100,000 copies worldwide. It was with the profits of Starglider that Jez enlisted the help of the crew at Argonaut. The games hero Jaysan has since gone on to tougher tasks and his namesake Jez San is also progressing to an even brighter and more profitable future.



*Jey San, head of Argonaut Software*



*The Bit Map Brothers: On the crest of a wave*

Also on the crest of the games wave are the Bitmap Brothers, this year's EMAP 16 bit programmers of the year. No relation, they are Mike Montgommery, Eric Matthews and Steve Kelly. They met through programming but got "related" with the advent of 16 bit computers. Their first game was the hugely successful Xenon. Following an offer they couldn't refuse from Mirrorsoft, the Bitmaps went on to produce Speedball on the Image Works label. Speedball heads up an amazing array of Image Works products including Bombuzal, Fernandez Must Die and Rocket Ranger.

Success is the name of the game for both Jez San and the Bitmaps. Visitors to the Commodore Show's Games Workshop can savour an interesting look behind the scenes of that success. Who knows? The young visitors to this year's workshop could be the Sans and Bitmaps of years to come.

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to use the show for the launch of his new Diamond auto-boot hard disc complete with fast file. This will be its first appearance. Price £599.

Kuma Computers will be adding two new titles to its range of professional Amiga software at the show. K-Data is an intuition based flat card database combining exceptional ease of use with many of the features normally associated with more complex relational databases. These include sorting on multiple criteria, merging and splitting of files and high speed operations. The file size, limited only by the disc capacity and the layout and size of records and fields, can be altered without the necessity to re-input data already entered. It costs £49.95.

K-Roget is based on Longman's Pocket Roget's Thesaurus and combines the qualities of this leading reference work on English usage with the ease of use and professionalism of an intuition-based program. Containing more than 150,000 words and phrases, K-Roget operates as a background accessory enabling it to be accessed while operating a word processor or other program. It also costs £49.95.

LOOKING forward to his first appearance at the Commodore Show is Simon Coombes of Oasis who is using it as a platform to demonstrate the range of MicroBotic expansion units from America that he is marketing for the UK Amiga range in the UK.

In addition to promoting these, he will be able to put potential buyers in direct contact with

# Meet the User Group

AMIGA users new and old will benefit from a visit to the exhibition stand taken by the Amiga User Group, whose officials will be on hand to chat with existing members and to explain its functions to prospective new ones.

The Amiga User Group was started in November 1985 by a gathering of people working in commercial software who had the original aim of developing new software for the Amiga.

As the membership became more widespread a newsletter was started three years ago and it has now grown to a 60 page bi-monthly forming an important nationwide thread to connect Amiga users.

There are now more than 1,000 members of the group, mainly serious users engaged in program development. Leading lights will be on hand at the Novotel and a visit to their stand will be well worth it for Amiga users.

## Win £500 prize

ONE lucky visitor will go away from the Commodore Show with a prize of equipment worth £500. That is the major award in a national competition to find the most innovative use of an Amiga in the field of hobbies. Commodore UK has sponsored the nationwide search and will present the prize to the winner who will be named at this show.

All people need to do to enter is write a description of their leisure program in no more than 500 words and send it along with any support material on disc to the Editor, Amiga Computing, Europa House, Adlington Park, Adlington, Macclesfield, Cheshire SK10 4NP.

The editor will nominate the most outstanding entry received and together with those received by other Commodore magazines, it will go forward to the grand final to be held at the June Commodore Show.

All finalists will be invited to demonstrate their innovations in the specially designed Leisurama feature area at the show. Editors of leading magazines will form a judging panel to select the overall winner.

The marketing manager for sponsor Commodore UK, Dean Barrett, said: "The Amiga is recognised as the leading computer in the leisure area but most people tend to think of leisure computing only in terms of playing games. In reality, the Amiga is being used for all sorts of leisure activities from bird watchers logging their latest sightings to horse racing enthusiasts keying in data to try and pick the winners.

"We've even heard of one reptile collector who keeps his pets in trim by working out their menus on the Amiga. The potential uses for leisure activities is endless".

There is still time to enter and enjoy a day at the Commodore Show, plus a chance to scoop the £500 prize donated by Commodore UK.

dealers who will have them in stock.

His range includes Starboard 2, a multifunction 2Mb expansion for the Amiga 1000. It is offered as a solution to the need for large amounts of memory on the 1000 and comes with a main board socketed for 1Mb of memory. Users or dealers may install their own chips or buy Starboard 2 with Dram installed. Price £224.95.

THE Oasis stand will also feature Starboard 2/500 with 2Mb memory for the Amiga 500 (£224.95), Stardrive SCSI high speed module for Starboard and the Amiga PC (£85), a multifunction module clock stickydisc with parity logic and maths co-processor support for Starboard 2 and the Amiga PC (£55), HardFrame 2000, a superfast autoboot SCSI for A2000 (£199.95 card only, £219.95 with frame, £500 for card, frame and 32Mb Seagate drive), 8-Up, an 8Mb ram card for A2000 (from £124.95), external drive F Data-10 (£99.95) and twin external drive with PSU, and F Data-20 (£199.95).

Aiming to help people get more out of their Amiga sound, Siren Software will be showing its Amiga Soundblaster at the show. This small stereo amplifier comes with two high quality 20 watt three-way speakers and is easily connected to the Amiga to give a new dimension to games. Price £39.99.

Hi Tension will be showing Icon Paint, Office Manager and a new 2Mb internal ram expansion unit costing £350. Also on display will be VAT Master Professional, an accounts package which works in conjunction with Superbase Professional. At a price of £16.95 A1 Computer Supplies will exhibit a new disc storage box, the Posso Box, which accommodates 180 3.25in discs.

ONE hundred per cent loading success on popular games is the claim for the Load-It adjustable data recorder from Mills Associates which will be on display at the stand of its UK distributor Palan Distribution. Made for the Commodore C64, it incorporates manual adjustment of the read/write head together with a visual led array which shows maximum signal strength. It costs £39.99.

Bytes and Pieces of Lytham, Lancashire, is another firm for which this will be the first Commodore show. New on the B and P stand



*The Load-It adjustable data recorder*

will be an Amiga A2000 clone box for the A500 and A1000. This plugs into the expansion slot and provides eight A2000 slots for memory, drives, At and PC cards and co-processors. Also on show will be a two slot expansion for A2000 cards.

"We will be showing an A500 internally expanded to 5Mb memory, the new Fat Agnus custom chip giving 1Mb of chip memory and hung on the side, a 300Mb hard drive", said Chris Wright of B and P. "We have also brought out a fan cooled power supply for the A500 that gives 12 times the power of the original and does not cost as much".

***Add these and many other new products to games galore and it means an opportunity not to be missed for the Commodore user. The show is open from 10am to 6pm on Friday and Saturday, June 2 and 3 and from 10am to 4pm on Sunday June 4.***

## Experts at Graphic Workshop

ANOTHER special feature of the Commodore Show will be a Graphics Workshop where visitors can get expert advice on how to furnish their programs with good graphics. Talented Mark Pickervans has agreed to run this and to demonstrate his techniques to those taking part.

Now a freelance writer, Mark has worked with Electronic Arts and was responsible for Flair Paint, the former AMS art package for the Atari ST recently taken over by Database Software.

Joining the Bitmap Brothers and Jez San in the Games Workshop will be Andrew Braybrook who wrote Paradroid and Uridium and now works for Telecomsoft, plus Stan Schembri who wrote The Last Ninja.

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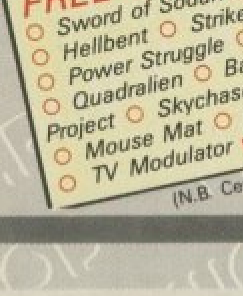
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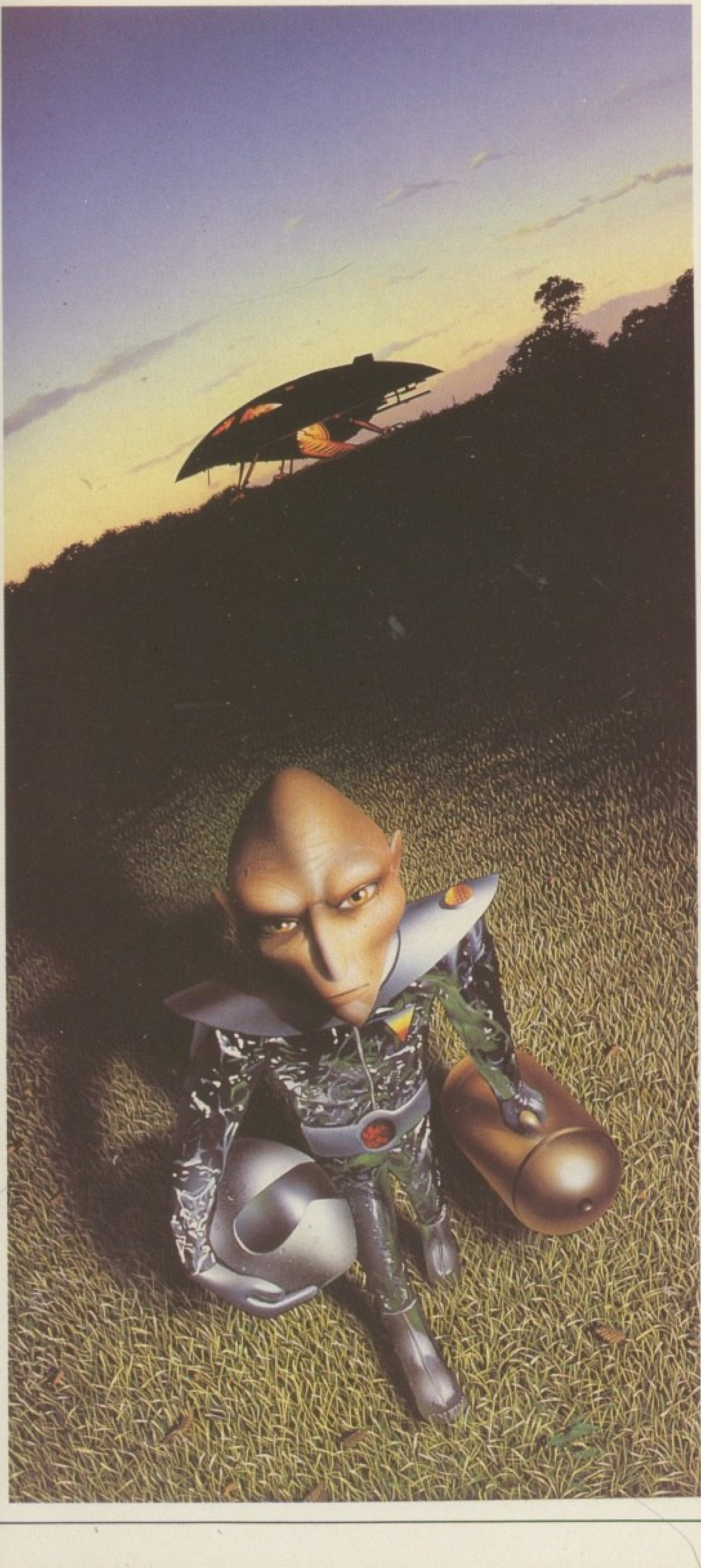
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# The shape of things to come

*Save as you go with Dave Eriksson*

A CLASS of game that brings the cinema screen to our monitors has recently come into its own. Animation has had a fatal attraction for programmers from the very first. With the early graphics this produced all shades of disaster; with the Amiga, animated sequences have come of age.

Lucasfilm's latest adventure is Zak McKracken and the Alien Mindbenders. Apart from having the longest title yet, Zak is also the latest in the field of total animation. Not quite true cartoon animation, but certainly a step in the right direction.

The year is 1997, the place is San Francisco. Zak is a reporter for a crummy newspaper called The National Inquisitor, packed with the ultimate in utter drivel but boasting an enormous circulation among the less intelligent. Unbeknown to all, space aliens have invaded and built a stupidity machine that will steadily reduce everyone's IQ to that of a cretin. This is a ruse David Sullivan would be proud of.

Immediately before going on an assignment in Seattle Zak has a

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dream. This is the opening animated sequence to the game, and includes a visit from an alien from the distant past, a vision of a pretty girl, a strange device and being chased by one of the aliens.

The girl turns out to be Annie Larris, head of the Society of Ancient Wisdom. She has two friends, Melissa and Leslie, who have travelled to Mars in a converted camper van. All three have had dreams similar to Zak's.

The future of the world depends on these four working together to construct a machine to defeat the aliens. Parts for this Skolarian Device are hidden on Earth and Mars.

There is no text input, commands being initiated by selecting a verb from the list beneath the graphics window, and nouns from either the inventory list shown under the verbs or by clicking the cursor on an object.

One important verb is Walk To, the default command that appears after any action. Click in the graphics window, and provided it is possible, your character will walk smartly to the new position.

Nearly all actions are displayed as an animated sequence. Select Push and double click on a switch across the room and Zak will stroll across and push it for you. Every now and then one action will trigger off an event elsewhere with an animated cameo.

SEQUENCES can go on for some time and usually provide you with additional information. Clicking the right-hand mouse button halts the action and returns you to command mode.

The list of command verbs is limited, with Use being a general dogsbody to cover a multitude of operations.

Another verb appears once you have teamed up with Annie – Switch – to select which of the four main characters you want to control.

Linking words are supplied by the program, so "Use cashcard in slot" will appear on selecting the verb and the two objects. Many objects are only accessible from the graphics animation window.

An illogical application of the What Is command occurs in locations that are completely dark. Run the cursor around to find a torch, double click and Zak walks to this spot, and can then light the torch.

Included with the two program discs is a simple instruction booklet and a current copy of The National Inquisitor. Read the newspaper carefully, as it contains several fairly obvious clues.

Anti-pirating codes will be needed when you buy airline tickets. These codes are printed in dark blue ink on maroon paper – virtually impossible to photocopy. Not exactly easy to read either.

The game starts in Zak's apartment the morning after his dream. All he has is a ticket to Seattle. Search his two-room apartment carefully. Almost everything has at least one use and because there is no limit to the number of things Zak can carry, you may as well take everything which is

▶

# STUCK?

## GALDREGON'S DOMAIN

- *There is not that much gold to find so don't explore for fun – you will starve.*
- *Save before entering each special scenario. Go in, map it until you are killed, reload the last save and continue mapping until you know where you have got to go. Then reload again and go straight there.*
- *The ghost in the tower is a red herring.*
- *Although you have been told the elves are on the side of all that is good and proud in the land, you will have to kill their lord to get the green elvan cloak that will help you beat the leader of the assassins.*
- *Don't kill the Demon Master until he has summoned the demon which has the cross you will need later. You will have to kill him to get it.*
- *Don't waste inventory space on carrying lots of Light spells, there is only one dark location.*
- *Beware of repeating mazes in the assassins' wood and dwarven halls.*
- *The Labyrinth is in the south-west corner of your map. Don't attack the Medusa unless you are carrying the mirror, which is also found in the Labyrinth.*




*Zak approaching the bus to the airport. He'll have to waken that sleepy driver*




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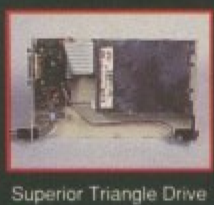

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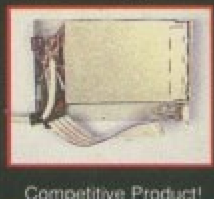

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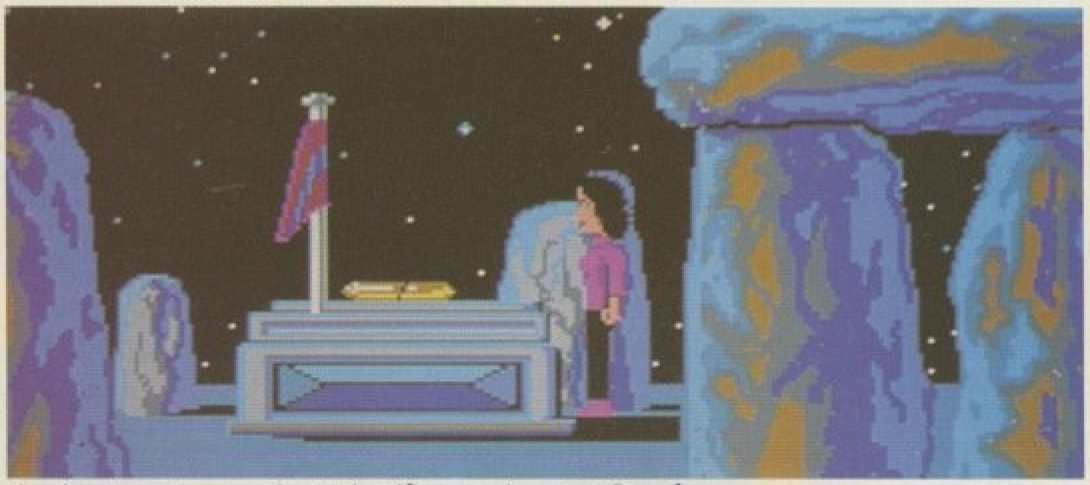
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*Annie attempts an ancient scientific experiment at Stonehenge*

not nailed down. Only four items are visible in your inventory but others can be scrolled into view.

There are a few locations to explore before you take the bus to San Francisco Airport. The bus driver is asleep and Zak will have to attract his attention before he can board. Zak's cashcard is vital, in 1997 this is the accepted way of paying for everything.

There are three useful objects in the plane, but to get them he will have to create diversions to distract the stewardess who is officious and objects to Zak prowling around, poking his nose into things that may not concern him.

SEATTLE has only four locations, one contains the artifact needed for his meeting with Annie. Once Zak realises there are four of them to work as a team, you can switch between the two girls on Mars or Annie and Zak on Earth.

Now Zak can start exploring on Earth to find the parts of the Skolarian device. As he will have stripped the neighbourhood of movable objects, you must not forget to give Annie something with which to wake the bus driver.

Without transport to the airport Annie will be stuck and unable to fulfil the tasks only she can complete.

You'll need to swap between the four to learn clues either to aid one of the others or because characters have special skills.

There are interesting mazes to be found in Mexico, Egypt and on Mars. To activate doors and locks they traced a pattern on sensors. The modern approach is to trace out the pattern with Zak's yellow crayon. But first you have to know the pattern.

It is not easy to get anyone killed. Careful use of cashcards is important – air travel is expensive so you will need to plan the order in which to tackle the various puzzles. Visit all the locations on a trial run to learn when to visit each and for what purpose.

Zak McKracken and the Alien Mindbenders is great fun to play. It has interesting puzzles with tons of good humour.




*Julian in his home village, about to start out on his long quest in Faery Tale*

## REPORT CARD

**Zak McKracken**
**Lucasfilms**
**£24.99**

*STORY LINE*
*Humorous and logical in a whacky way.*

*AURA*
*No easy death to keep you awake, a range of good puzzles instead.*

*STAYING POWER*
*Plenty to puzzle over, difficult to switch off.*

*GAMEPLAY*
*Mouse or keyboard control is easy to master, simple input routine.*

*VALUE*
*Not cheap, but hours of fun.*

*DIFFICULTY*
*Good for non-hardened adventurers.*

*OVERALL* *82%*

*I'm looking forward to Zak II.*

MICROILLUSIONS is not well known in the UK, except for what has become a classic Amiga role playing game – Faery Tale Adventure.

The story is that of the three sons of a small village's Master at Arms. Following a long period of peace and prosperity the land is invaded by a necromancer and his hordes of evil minions.

The village is repeatedly attacked until its magical talisman is stolen. Fearing the worst, the village elders ask the father to go to the King for help. For a long time they hear nothing until one day he staggers back, wounded and dying.

He confirms that the country is overrun by all that is evil. On his deathbed he explains to his sons what must be done to save the land from the necromancer's clutches.

From a prophesy made in the distant past it was said that seven quests had to be completed to defeat such an enemy. You control one of the sons in his quest to fulfil that prophesy.

Starting from the village you must ▶

explore, talk to those you meet and defeat enemies. There is plenty to find, and you must learn how all the special objects will help you.

Control is via keyboard or mouse. A large graphics window shows your character and a portion of the countryside. The music changes to an ominous tune when enemies approach.

Beneath this scene are three windows. One tells you what is happening, with the character's vital statistics. A second is a menu where you can load and save – check your inventory, talk, buy, use a magic item and so on. Another window contains a compass rose from which you can direct your movement.

You start with brother Julian. I found it very difficult to keep him alive for very long. Each time he is killed his luck points are reduced. If they have not reached zero a sweet little blue faery flies across the screen and resurrects him.

Once Julian is finally dead, you move over to Phillip. When he has gone to meet his maker, Kevin, the youngest, steps forward.

Faery Tale is not an easy adventure to get into quickly. You must learn how to best use what you find, especially the magic items. When fighting hand to hand you must face your enemy and use your chosen weapon. This takes a little practice to synchronise accurately.

Addictive, once you get the hang of it, and there is certainly plenty to explore.



*A short way from his village, Julian finds a chest of useful items*

## REPORT CARD

**Faery Tale Adventure**
**Microillusions**
**£24.99**

*STORY LINE*
*Fantasy in the D&D tradition.*

*AURA*
*Difficult to get started, which takes the shine off the final product.*

*STAYING POWER*
*OK once you learn the ropes.*

*GAMEPLAY*
*Mouse and keyboard control takes a little time to adjust to.*

*VALUE*
*Many hours needed to get anywhere.*

*DIFFICULTY*
*Easy to lose your way.*

*OVERALL* *81%*

*A classic.*

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| LC10 Black Ribbon | £6.50 |
| NEC2200 Ribbon | £7.50 |
| 3.5 DS Brand(10) Disks | £19.50 |
| 3.5 DS Bulk (50) Disks | £45.00 |

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| | |
|---|---|
| Deluxe Photolab | £49.50 |
| Digipaint 2 | £32.00 |
| Express Paint 3 | £68.00 |
| Fantavision | £29.00 |
| Photon Paint | £49.00 |
| Pixmate | £39.00 |
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| Sculpt 4D | £326.00 |
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| Video Magic | £79.95 |
| Lights Camera Action | £35.00 |
| Intro CAD | £40.00 |
| X-CAD | £325.00 |

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| | |
|---|---|
| Pro Sound Designer Gold | £79.95 |
| Amiga Music System | £179.95 |
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| AegisSonix | £39.00 |
| Dynamic Drums | £38.00 |
| Sound Oasis | £50.00 |
| Dynamic Studio | £99.00 |
| Midi Interface | £24.95 |
| Master Tracks Jnr | £89.00 |

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| | |
|---|---|
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| Pagestream | £149.00 |
| Kindwords | £39.00 |
| Excellence | £139.00 |
| Word Perfect | POA |
| Superbase 2 | £70.00 |
| Superbase Pro | £175.00 |
| Digita Home Accounts | £27.00 |
| The Works Platinum Ed | POA |
| SuperPlan | £70.00 |
| Maxiplan 500 | £70.00 |
| Maxiplan+ | £100.00 |
| NOT LISTED | CALL |

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|---|---|
| Star LC10 Mono | £199 |
| Star LC10 Colour | £249 |
| NEC P2200 (24 Pin) | £299 |
| Postscript Laser | £2999 |
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| ROLAND PLOTTERS from | £649 |

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|---|---|
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| 5.25" Triangle | £129 |
| 3.5/5.25 Triangle | £239 |

## HARD DISKS A500

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| | |
|---|---|
| 20MB Triangle 3 (68ms) | £499 |
| 40MB Triangle 3• | £699 |
| 80 MB Triangle 3 | £999 |
| A500 2MB Auto Boot Board | £59 |
| A500 2MB Board | £349 |

## HARD DISKS B2000

| | |
|---|---|
| Hard Card 40MB | £599 |
| SCSI+2MB 0K | £299 |
| 20MB+2MB 0K (68ms) | £499 |
| 40MB+2MB 0K• | £699 |
| 80MB+2MB 0K | £999 |
| 2MB Memory | £299 |

•Add £69 for Quantum 11ms Drive

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|---|---|
| Dos to Dos | £29.00 |
| Quarterback | £35.00 |
| Transformer | £25.00 |
| BBC Emulator | £35.00 |
| Atredes BBS | £169.00 |
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| Hisoft Basic | POA |
| Ruby Comm | £72.00 |

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# Hi ho



# Silva lining

*Simon Rockman brushes up on his polychromatic pixellations*

REMEMBER how you felt when you first started playing with Deluxe Paint? The feeling that you could draw anything, even if your greatest talent at art was bunking off. Well the feeling is back because now anything you can draw, you can animate.

I once heard that artists find it difficult to resist the temptation to add little touches to a masterpiece – adding a few extra seeds to some sunflowers, making that smile a mite more enigmatic, placing a seventy-third eye on a space alien. Dan Silva, author of the DPaint trinity, has the same problem. His seventy-third eye took the form of animation. DPaint II already offered some impressive demos with colour cycling, but Dan wanted to add multiple frames.

The result is DPaint III's *animpainting,* a name so good Electronic Arts has trademarked it.

A professional animator is happy to redraw a picture in a slightly different position for every frame, but for most of us this is too much like hard work. And what computers are good at is doing the hard work and leaving the creative stuff to humans.

The simple way to use animpainting is to draw one frame, step through to the next, draw and step on again. The clever way is to define what you want to move as a brush, by drawing the shape and then cutting it out, and hold down the animpainting key while you draw.

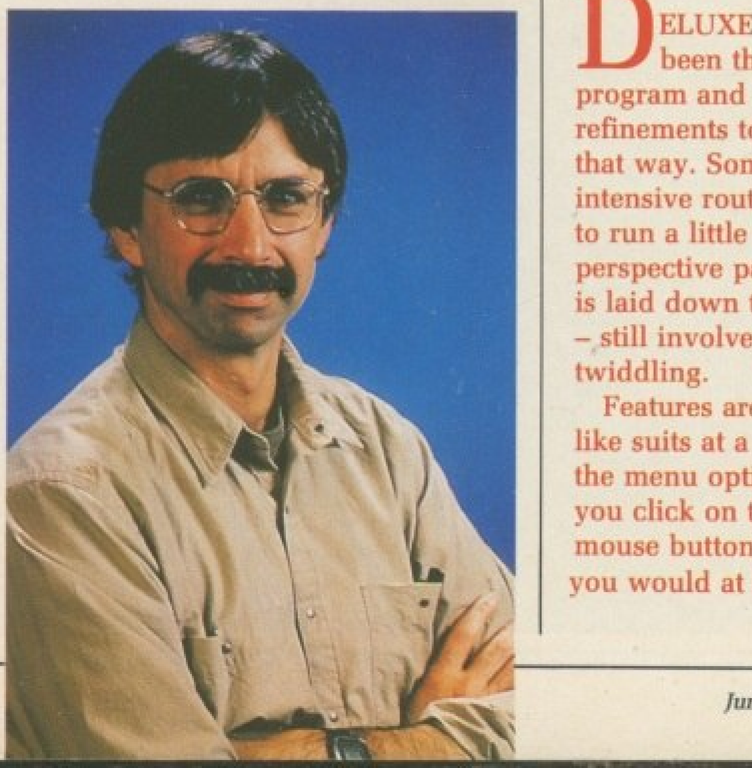
Whenever the brush is redrawn DPaint III steps on to the next frame. The effect is very convincing. In true DPaint style, what holds true for one mode carries through to animpainting. So if you draw a line which is a dozen brushes long, the first 12 frames of the animation contain your brush. In practice, lines tend to be longer than the number of frames you have chosen, so you get a number of frames crawling across the screen.

There is a cure for this. A Move menu lets you define a direction for the plotting of the brush in three dimensions. The third axis allows shapes to come out of the screen at you or recede over the horizon. Just the thing for video titling.

The Move control spreads the positioning of the brush evenly through a number of frames. The spacing can be altered to give the effect of acceleration or to eliminate the effect of the brush bashing into the screen when it comes to a sudden stop.

While the brush is moving every which way around the screen it can be made to spin and tumble, the kind of thing which a trained animator finds taxing. All these effects are great for things like rockets and aeroplanes but if you want to show a horse galloping, you need the legs to move. Dan, Dan the DPaint man has thought of this. He's included animated brushes. Each time you draw with an animated brush a new frame is shown. Combine this with animpainting and you can paint a movie.

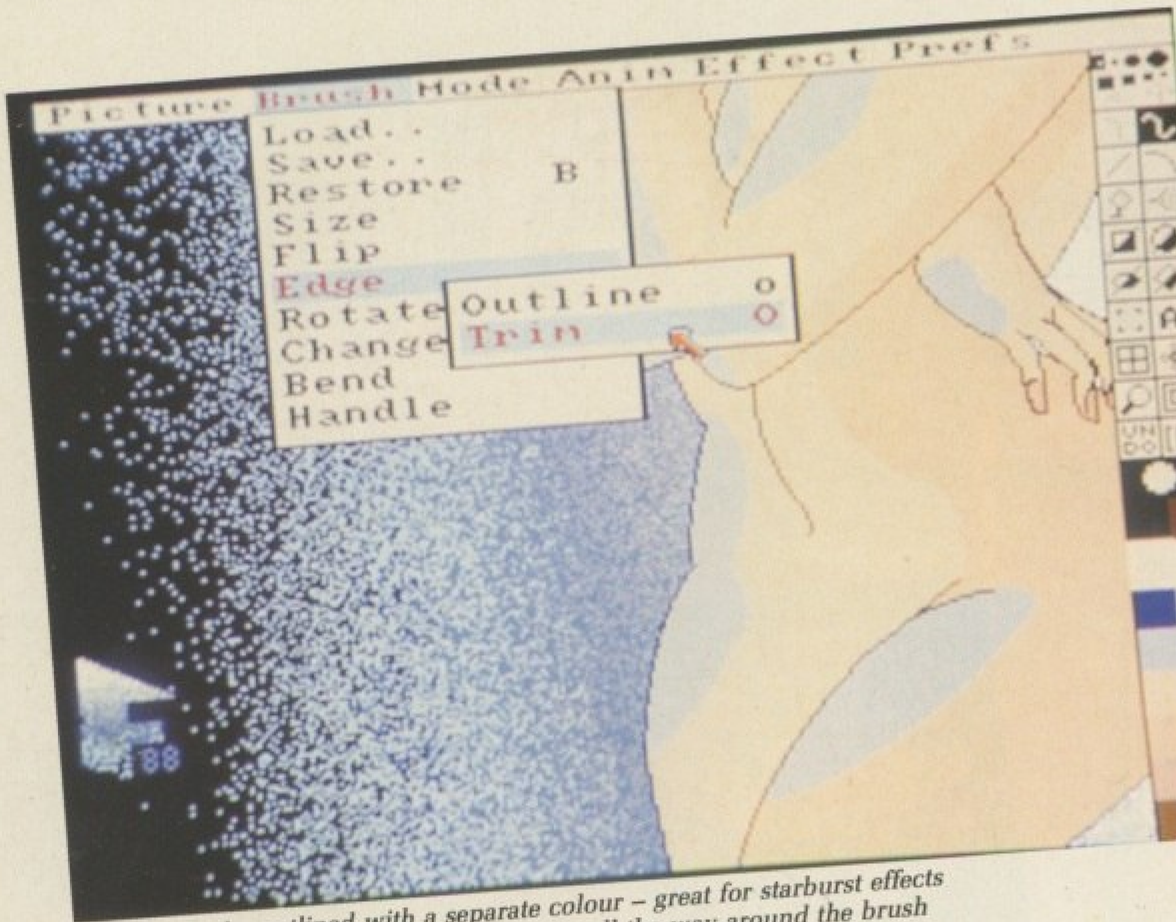
It'll work with a megabyte of memory, but creaks a bit when you try to animate something really big. Files are standard Amiga anim format. I loaded in some screens from The Walker II demo trailer and, ahem, enhanced them. They worked perfectly. Finished animations can be run from outside DPaint III with a Play program. The possibilities posed by animpainting, move and animated brushes are tremendous.



Dan Silva, mere mortal or programming deity?

DELUXE PAINT III has always been the premiere Amiga art program and has undergone a few refinements to make sure things stay that way. Some of the processor-intensive routines have been recoded to run a little faster, although perspective painting – where a brush is laid down to give a 3D impression – still involves a fair bit of thumb twiddling.

Features are packed into the menus like suits at a city wine bar. Most of the menu options do extra things if you click on them with the right mouse button. Some do more than you would at first expect if you click ►




Brushes can be outlined with a separate colour – great for starburst effects – or trimmed by taking a pixel off the edge all the way around the brush




The Move menu offers some very powerful brush manipulation

on them in different places.

If you left click on the top left-hand side of the Make Brush icon you can drag a box around an area of the screen and, using the left-hand button again, drag the box to enclose the shape. This copies the image within the box to a brush.

Or you can right click to remove the image from the screen and only have it as a brush. Or you can click another part of the icon to get a lasso type feature which can cut out irregular shapes. It's all quite easy once you've tried it.

Extra Half Brite (EHB) mode is only used by a handful of programs. DP III has joined them. It's great for creating shadows and a supplied example shows Fred Astair dancing over scenery. When I say over I mean the scenery shows through Fred's black figure, ghost-like, dimmed by the use of EHB colours. I suspect DPaint III offering this will mean more programmers waking up to the EHB possibilities and, as many of the sprites you see in games are designed with DPaint II, many of the death-belching aliens you see in future will have bigger and better shadows.

## The Birth of Deluxe Paint

NOBODY would accuse Electronic Arts of production line programming, they talk of "artists" and "creative direction", but they are fairly strict about the development system. All programmers use expanded IBM ATs known as Artists Workstations. Deluxe Paint started life as part of this development environment. It ran on the IBM and was know as Prism.

Electronic Arts was let in on the Amiga secret very early. They had the first prototypes in red wooden boxes. Straight away they knew that this was an amazing graphics machine. But they decided not to convert Prism, Commodore bought the rights to the Amiga and came to the conclusion that the graphics potential of the Amiga was so great that they should bundle a paint program with the computer.

This was enough to persuade Electronic Arts that re-inventing the wheel by selling a similar package was not a viable proposition on the Amiga so the company started work on Marble Madness. When it became clear that Commodore would not be developing a screen designer for the Amiga, EA stepped in.

It laid down the specification for IFF and set the standard for many of the features we now regard as the norm in Amiga programs.

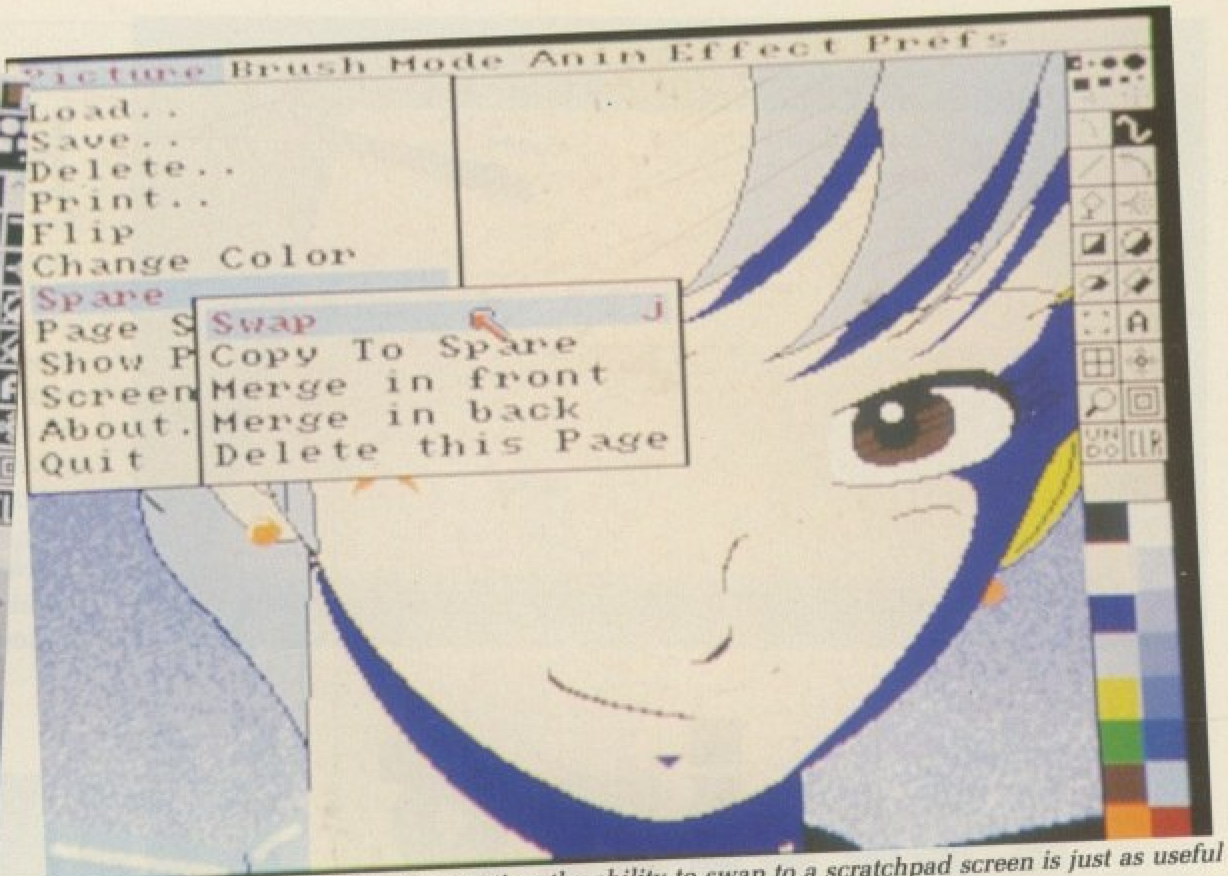
The success of Amiga DPaint II led to its conversion for the IBM. OK, it is still slower on the most expensive, raciest PC than on a simple 500 Amiga, but then that is the fault of breadheads who buy from IBM. Even if we make them look foolish they still have to thank us for getting Deluxe Paint out of Electronic Arts labs and on to their screens.

DPAINT III has one feature, first seen in Photon Paint, I love it for – the ability to wrap a piccie around an object. Perhaps I've been reading too many computer graphics books with formulae I don't understand – well, looking at the pictures at least – but I still think that a mandrill wrapped around a teapot looks better than real art.

Video recording buffs have been known to buy an Amiga, DPaint and a genlock just to put lines like "Gemma's 3rd Birthday" over a shot of candles being spat at.

They can now have better titles for two reasons. First, DPaint III supports overscan. This takes the picture beyond the edges of the monitor into an area only video can see. Budding Dickie Attenboroughs don't like a






*Despite offering multiple frame animation, the ability to swap to a scratchpad screen is just as useful*

border around the screen. The second feature, and one I really find useful, is the ability to preview fonts.

In keeping with all good Amiga programs DPaint III looks in the font directory. It brings up the list of those available in a proper requester, but it offers a Show option. The highlighted font can quickly be displayed in a window within the requester, so you no longer need to remember if Sapphire or Garnet is the one with the twiddly bits.

All I want now is sorting by size, a feature I've only seen in the unreleased Pen Pal word processor.

Colour fonts are catered for, but you have to run a separate task first. They conform to the standard colour font spec. I loaded a couple from the Shakespeare DTP program and some really good Kara fonts are supplied with the software. Once you've got this lot spinning, zooming and sliding, your birthday party will look much brighter. The cake will still taste soggy.

WHAT the manual will not do is teach you to draw. Go to the library and take out a couple of books on the technical aspects of drawing. You will rapidly learn how to apply the theory to Dpaint III, even if the J.R.Hartley who wrote the book thinks that an Amiga is something they serve in Mexican restaurants.

Most programs are best learnt by having a friend who knows the drill sitting at your side while you struggle through menus. DPaint III is an exception. There is no way your friend will be able to resist "doing it for you".

It is also impossible to follow what an experienced user is doing by just watching. Drawing, shading, cutting and pasting all become reflex actions, with menus and keys selected in a trice. Once you are experienced you'll understand but trying to learn can be frustrating.

DOCUMENTATION is clear and friendly, if a bit intense. It doesn't have enough pictures showing what you can see, but copes with the problem of dealing with Amiga experts and computerphobic artists brilliantly. It also copes with helping those who have never touched Deluxe Paint, those who dabbled with it and those who are upgrading.

The tutorials are excellent. Very absorbing. I found I kept on trying things before the manual mentioned them. I was really enjoying myself. It's the only utility I have used with the "just one more game" attraction of something like Bubble Bobble, even if it doesn't support HAM mode.

By now you have got the impression that I like Deluxe Paint III. I'm honestly not trying for Pseuds' Corner when I say it is more than three discs and a manual, it is an avenue to artistic enlightenment.

There is a very sensible upgrade policy. Users who have DPaint II need only pay £30 for DP III, while artists with the original, including those who got it free with their Amigas, can upgrade for £50. Neophytes will have to shell out £80. It's still a bargain.

## REPORT CARD

**Deluxe Paint III**
**Electronic Arts**
**£79.95**

*EASE OF USE*.........

*Even if you can't draw, you can still animate. All the menus are well laid out. A bit memory-hungry, it needs one meg and works better with more.*

*SPEED*.....................

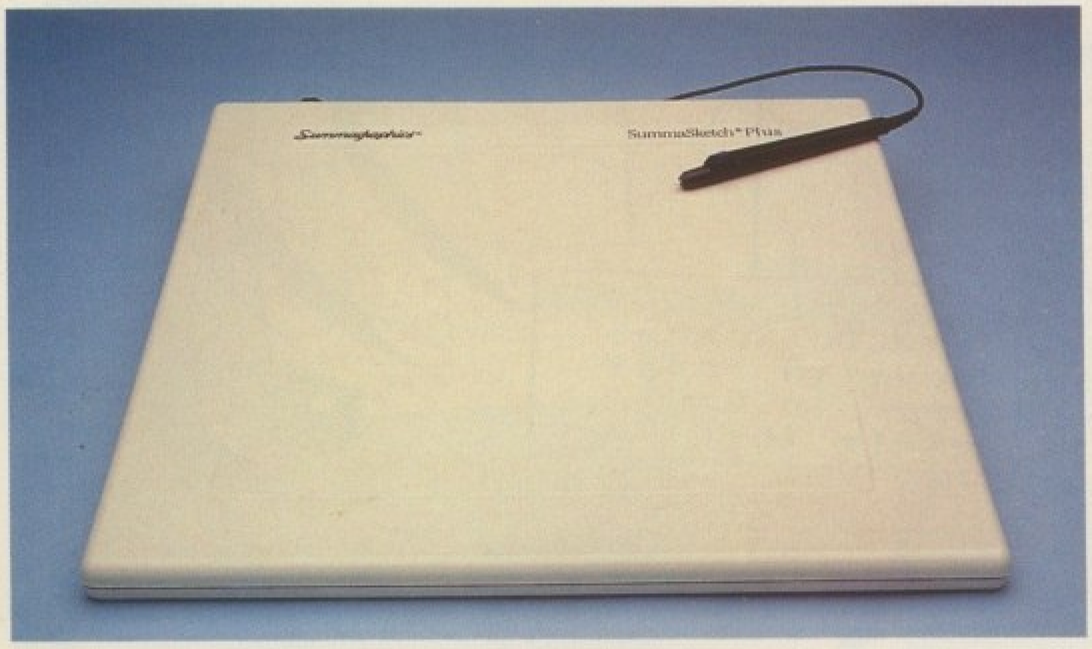
*Faster than Deluxe Paint II. Large brushes are handled with ease. No slow HAM mode to damage the score.*

*VALUE*...................

*If you are a commercial artist or programmer it will pay for itself in hours. The rest of us should buy it for the fun we will have with it.*

*OVERALL* *97%*

*The highest score Amiga Computing has ever awarded. Dan Silva deserves his success for being a programming genius.*




REPUTATIONS are hard to build, well good ones are. The Amiga has quite rightly earned itself a reputation for being the computer for high powered graphics at low powered prices. Because of this the range of graphics software – paint, animation, CAD – and associated hardware available is large and growing.

Many applications can be driven adequately using the mouse, particularly if, like me, your artistic ambitions are limited to producing cartoons or kiddies-style illustrations.

# Doing it with

*Mike Rawlins pens his opinions on the AProdraw Graphics Tablet*



*Tracing is fun*

But what if you are striving to create a finely detailed commercial illustration, to develop an intricate animated sequence or to digitise a complex engineering drawing?

Again, you could use the mouse, but it tends to lack both the accuracy and the sensitivity required to produce really satisfactory results.

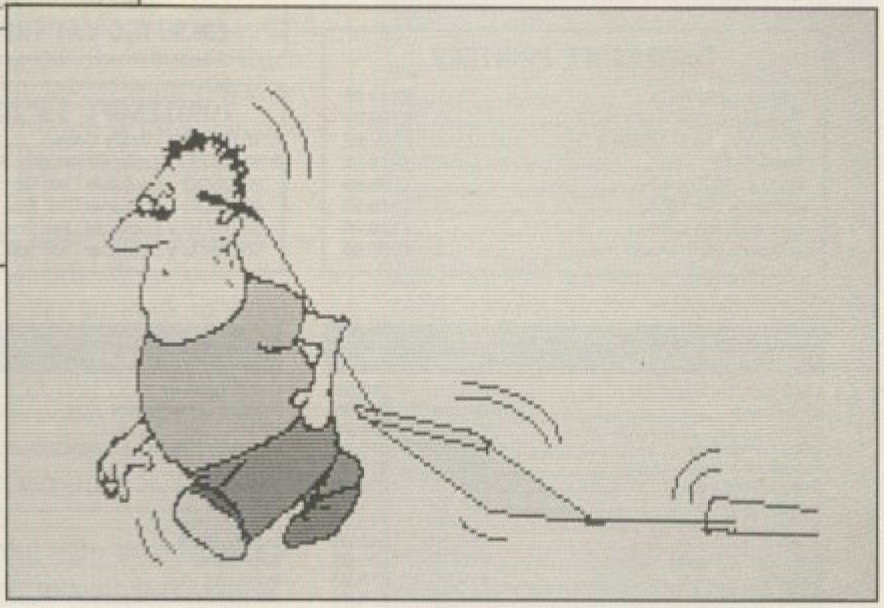
So what's the solution? Get hold of a graphics tablet, that's what. Which brings us nicely on to the AProDraw graphics tablet package from R & DL Productions of Long Island, New York, distributed in this country by HB Marketing.

The AProDraw packages were developed to meet the need for a graphics input device supporting applications written for the Amiga – most of which assume the use of a two button mouse. The packages consist of the MM series of tablets from Summagraphics – originally developed for use with IBM PCs and compatibles – together with the software drivers which enable the tablet to be used within the Amiga's mouse driven, multi-tasking environment.

Three sizes of tablet are available. This review was carried out on the MM1201, 12in square version, the alternative sizes being the MM961, 9in by 6in, and the MM1812, 18in by 12in. The larger tablet is only available to special order, and the small one is of such limited use HB



*Things you can do with a tablet...*



# stylus

doesn't carry stock.

The hardware consists of the tablet itself, the power supply, a 25-to-9 pin serial adaptor cable and a stylus. A four button cursor is to be sold as a separate option.

The tablet can be used tilted or laid flat. The tilt assembly is attached to the back of the unit when shipped and varies the angle by sliding up or down a runner and rotating the extension arms. For the tablet to lay flat, the tilt assembly is removed and rubber feet attached.

The stylus connects into a phone type socket near the top left corner. This should never be disconnected while the tablet is powered up as it could cause considerable damage.

The stylus has one button in its tip which is activated when pressed firmly against the tablet. A second button is provided on the body of the stylus positioned near the tip to enable operation with your index finger. They correspond by default to the left and right mouse buttons respectively, although this can be altered using the configuration program.

BUTTONS on the cursor are labelled one to four. One and two represent the left and right mouse buttons, four represents a middle button which is supported by Intuition but rarely used by application programs. Button three is equivalent to pressing both move buttons simultaneously. This can cause some applications to behave strangely.

The stylus – referred to as the pointer from now on – emits a low intensity magnetic field. This is sensed by a grid inside the tablet which determines the pointer's location. The pointer need not be in contact with the tablet – there can be up to 0.5in between them (0.25in with the stylus). The extent of the grid – the active area – is indicated by a groove etched around the edges of the tablet.

Because it functions electro-magnetically, the tablet can generate radio frequency interference. Although compliant with American Class B limits, it is possible that it could cause interference with your radio or TV set. I didn't find this to be a problem – more's the pity; any interference to Neighbours can only be an improvement.

Presumably it is possible that some inappropriate prodding with the stylus in the wrong place could lead to a spot of inadvertent disc corruption, so be careful.

The software is supplied on a single disc which contains the format driver, the configuration program and a scaling program. These can be copied on to your application discs as required. The driver program can be started from either Workbench or the CLI. However, you should ensure that the tablet is powered up first.

The configuration program allows you to adjust the driver to suit your particular hardware set-up and preferences. With it you can adjust the tablet's aspect ratio to suit that of your monitor – the default is preset to suit the Amiga monitor – set the serial device name and port number, change the assignment of the stylus or cursor buttons, set the tablet for a larger than normal screen size and fine tune the response of the tablet by altering the data transmission rate and driver priority. The driver must be stopped and restarted before changes to the configuration take effect.

Using the tablet is as easy as using a sketch pad and pencil. The stylus can be held as you would a pen for sketching and tracing. What it will not do is draw thicker lines if you press harder. This is something real artists find hard to get used to. I found the stylus easy to use.

However, being right handed and with the stylus connected to the top left hand corner of the tablet, I found that the cable tended to get in the way. This was more annoying rather than a real problem, but could have been avoided by repositioning the connector. And no, you can't just turn ▶

◄ the tablet round, not unless you enjoy drawing upside down.

The connecting cable resists twisting and as a result it is often difficult to keep the second button positioned correctly for easy use. It is also very easy to press both stylus buttons at the same time. Although this caused no problems with Dpaint it should be avoided if possible.

The cursor accessory would normally be used for digitising technical drawings, and works best when held parallel to the tablet. Again the trailing cable can be annoying for right-handed use – I suppose it makes a change to find a product which is better suited to left handers.

It's an unfortunate fact of life that any drawing that you are tracing or digitising will not be conveniently sized to fit on the screen or the tablet.

This is where the scaling program comes in. It can be used to set up the tablet so that art work traced on it will be enlarged or reduced to fit a particular portion of the screen.

The scaling program can only be used while the driver is running. It interacts with the driver and has an immediate effect on how the tablet responds.

It works by using the pointer to select the required areas on the screen that correspond to the selected area on the tablet. A combination of screen and tablet sizing can be used to trace a drawing that is larger than the size of the tablet, although it must be said that this is a fairly involved process.

ONCE you have used a graphics tablet it's difficult to believe that you could ever go back to using anything as crude as a mouse. The AProDraw tablets provide a range of sizes and functionality that should suit most applications. The documentation supplied is sparse but adequate.

At £460 for the 12in square model this is not a toy, but for professional work a tablet is essential and the AProDraw range represents good value for money.

## REPORT CARD

**AProdraw Graphics Tablet**
**HB Marketing**
**12 x 12 £458.85**
**18 x 12 £688.85**

*EASE OF USE..........*
*Threading the leads is like playing with an educational toy, but it is really a matter of plug in and go.*

*SOFTWARE............*
*The supplied configuration was easy to use. All other mouse driven software seemed to work OK, but I wouldn't want to try playing Starglider with it.*

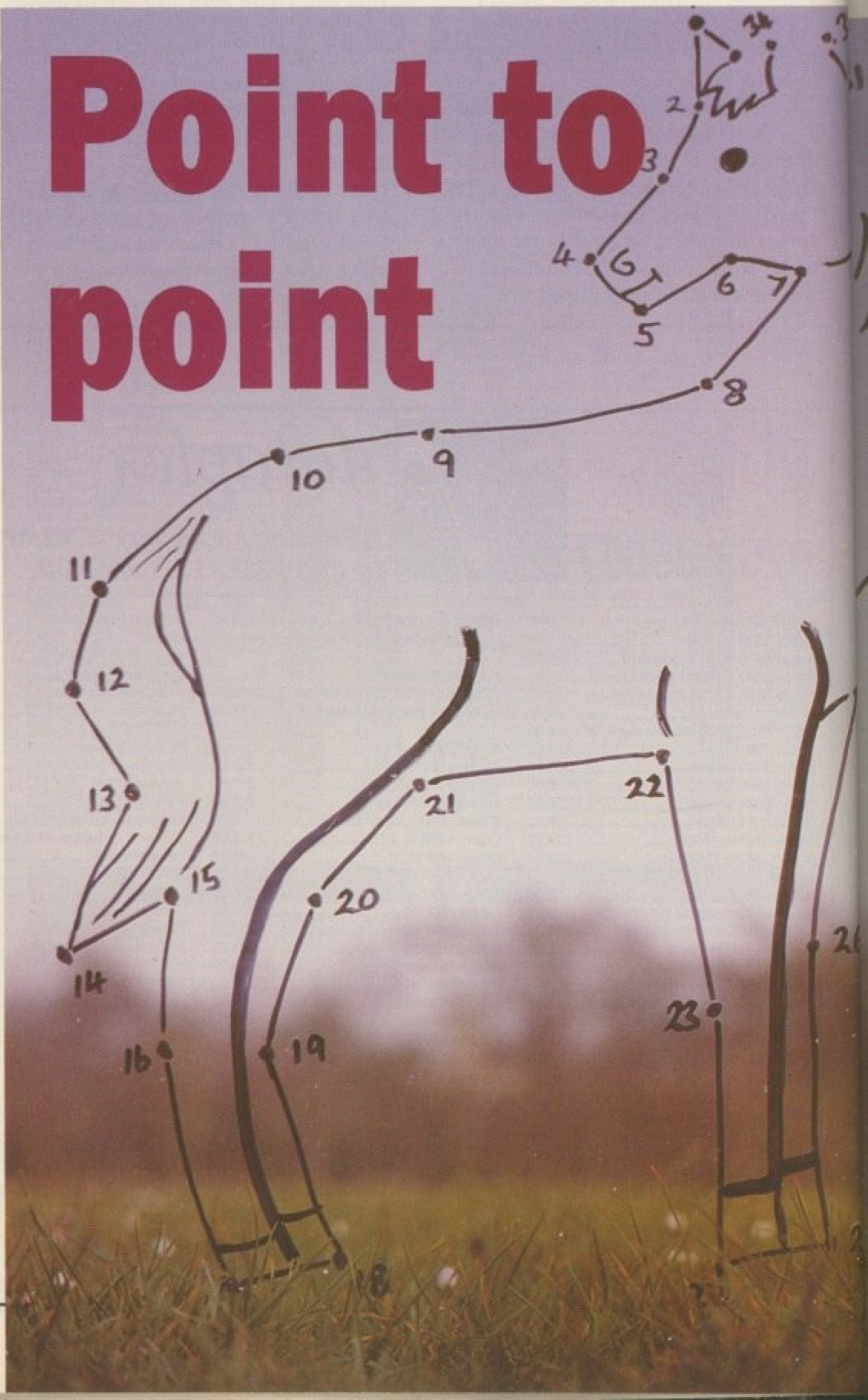
*SPEED......................*
*Drawing with the tablet is faster and more precise but it seemed to slow down the application.*

*VALUE ....................*
*You need to be a pretty serious user to justify lashing out this kind of money. If you do you will be happy.*

*OVERALL 79%*

*Using a hotch-potch of Summagraphics hardware, R & DL interface software and Deluxe Paint II the whole thing held together as one.*

# Point to point



RESOLUTION is what it's all about. The Amiga has the best graphics of any computer available to ordinary folk like you and me because of the many picture elements, or pixels, that make up the display. AmigaBasic allows each individual pixel to be plotted by supplying two numbers, an x coordinate for across the screen and a y coordinate for up and down.

Think of a piece of graph paper if you like, with the horizontal rows representing the x axis and the vertical columns the y axis. Assuming that the computer is in non-interlace mode, we have a resolution of 640 x 200 pixels in four colours. This means the x coordinates must lie between 0 and 639, and the y coordinates between 0 and 199.

Two Basic commands will plot a point on the screen, PSET and PRESET. The first stands for Pixel SET. A spot prize of one unformatted 3.5in chocolate biscuit will be awarded to whoever sends in the best explanation for PRESET. Which reminds me of a useful tip: Always keep a packet of chocolate digestives beside the computer in case you run out of disc space.

A biscuit can store 178k and makes a good emergency backup system. You can erase the files on them by licking the chocolate off the top. I developed this system of data storage on a 3in disc drive, which explains why they only hold 178k and not the 880k you are used to.

Both PSET and PRESET must be supplied with two coordinates enclosed in round brackets, followed by an optional number describing the colour of the pixel to be plotted. Like this:

```
PSET (x,y),optional-colour-id
PRESET (x,y),optional-colour-id
```

Notice how I spelt colour with the letter u. Using an American computer is no reason to become lazy. Next thing you know you'll be writing thru instead of through, garbage instead of rubbish, vacation instead of holiday and missile base instead of Greenham Common.

The value you put in the optional colour id depends on the screen mode you are going to use. Screen modes are an article in themselves, but if we are using the normal display the colour number lies between zero – which is usually, but not always, the background colour – and three. This means we can have up to four different colours on the screen at once. The default colours are blue for colour zero, white for colour one, black for colour two and orange for colour three.

So what is the difference between PSET and PRESET? Well, it becomes apparent if you leave out the colour id. PRESET will plot a point in the background colour – by default this is zero and blue – and PSET will plot a point in the current foreground colour, the colour all the latest writing to the screen has been done in. Therefore to plot a point in the middle of the screen in colour number two we would type PSET (320,100),2 and to erase it, PRESET (320,100).

Listing I uses the PSET command inside two FOR...NEXT loops to draw a box. You can see that drawing lines by using nothing but PSET and PRESET commands would be very tedious, so Basic gives us the LINE command to speed things up. It comes with as many parameters as there are baked beans in a tin, so we'll start at the simplest option and work on from there.

*John Kennedy slips into the saddle for another trot around the programming course*

LINE (x1,y1)–(x2,y2),*optional-colour*

This draws a line from the screen coordinates (x1,y1) to the screen coordinates (x2,y2). Just like PSET, an optional colour id number can follow the statement. Leaving it out will cause a default to the current foreground colour.

The first coordinates you supply LINE with can be omitted. LINE –(x2,y2) will draw a line from the last point drawn on the screen to (x2,y2).

I was going to show you another example listing to draw a box, this time using LINE commands, but rather cunningly AmigaBasic allows you to draw a box with a single LINE command by putting the letter B after the coordinates. So to replace the whole of Listing I we can use:

```
LINE (50,50)-(150,150),2,B
```

In this case the pairs of coordinates describe the top left corner and the bottom right corner of the rectangle. The computer works out where the four lines go and – Hey Tesco! – a box is drawn in colour number two. Replacing the B with BF will cause the computer to draw a solid, filled-in box instead – a fast way to draw a large, coloured, rectangular area.



SPEAKING of speed, why not type in Listing II to get an idea of how fast the LINE command is? This program bounces a line around. The old coordinates of the line are stored and used to erase it next time around inside the loop, giving the impression of movement. Press the spacebar to stop the program. You should try adapting it to draw a box and move it around or even a triangle by using three points instead of two.

You will have noticed that when we specify the x and y coordinates of a pixel on the screen we are using unique, or absolute, values. The coordinates are linked to a specific point on the screen and no other. It is possible to give the coordinates in a relative form, by which I mean their location is given in relation to another previously defined position. To use this technique you must put the keyword STEP before the numbers in the round brackets:

```
PSET (100,100)
PSET STEP (10,10)
```

This plots a point at (100,100) and then another, not at (10,10) but at (110,110). The STEP keyword can also be used with the LINE command:

```
PSET (100,100)
LINE STEP (10,10) - STEP (20,20)
```

You have probably already noticed that AmigaBasic doesn't use the most obvious names for its functions. Whatever team designed it went out of its way to be awkward. I mean, guess what MKS$ does? Or how about CDBL?

Ah well, could be worse I suppose. I've just used a computer on which the CAT command doesn't produce a catalogue of a directory, but prints the contents of a text file. Logical, eh? One day I'll come up to a new

▶

```
' Drawing a box
' the hard way.

FOR x=220 TO 480
  PSET(x,50)
  PSET(x,150)
NEXT x

FOR y=50 TO 150
  PSET(220,y)
  PSET(480,y)
NEXT y
```

*Listing I*

◀

computer, switch it on and type PRINT, whereupon it will say: "Just reformatted hard disc. Have a nice day."

Now we get to the piéce de resistance – a three-dimensional wire frame modeller, the ultimate program when it comes to drawing lines. Although written in Basic, it looks very nice. What's more, you should be able to understand what it is doing and adapt it to do even more exciting things.

Listing III will draw a simple wireframe object, in this case a cube, and allow you to rotate it in three directions. The term wireframe means that only the edges of the object are drawn, as though it were made out of wire. This means we can use the LINE command to create the object.

There are two problems with writing a three-dimensional program, both needing some yucky mathematics to solve. The first is how to draw what is essentially a 3D image on a 2D screen. This is handled by taking the third coordinate – the z axis, or depth in and out of the screen – and using it to alter our standard x and y coordinates. Using a simple equation – *m=1.5^object(p,3)* in the *Draw.the.object* subroutine – we can fudge a three-dimensional effect.

```
' The Amazing Bouncy Line Program.
' Try pressing the left mouse button.
'

' Randomly set variables.
oldx1=0:oldy1=0:oldx2=0:oldy2=0
x1=INT(RND*640):x2=INT(RND*640)
y1=INT(RND*200):y2=INT(RND*200)
dx1=INT(RND*8):dy1=INT(RND*8)
dx2=INT(RND*8):dy2=INT(RND*8)

Mainloop:
 WHILE INKEY$<>" "
  IF NOT MOUSE(0) THEN
   LINE (oldx1,oldy1)-(oldx2,oldy2),0
  END IF
  LINE (x1,y1)-(x2,y2),1
  '
  ' store last line drawn
  oldx1=x1:oldy1=y1
  oldx2=x2:oldy2=y2
  '
  ' update coordinates and check for
  ' edge of screen in each case.
  x1=x1+dx1
  IF x1<0 OR x1>640 THEN dx1=-dx1
  y1=y1+dy1
  IF y1<0 OR y1>200 THEN dy1=-dy1
  x2=x2+dx2
  IF x2<0 OR x2>640 THEN dx2=dx2
  y2=y2+dy2
  IF y2<0 OR y2>200 THEN dy2=-dy2
 WEND
```

*Listing II*

The second problem is how to rotate the object. I found the solution in my secondary school maths book in the chapter called Matrix Transformations. This can get rather heavy if you are not into sines and cosines, so just treat the equations as magic formulae that do the job.

All that remains to do is write a program which will take data that describes how the object is to be made up and handles the keypresses to rotate it. When typed in and running, pressing X, Y or Z will rotate the object around the relevant axis. Remember to click in the output window first or your keypresses will not register. There is a bug in the listing as it stands; if you repeatedly rotate an object, it shrinks. Anyone like to hazard a guess why?

Try experimenting with different data. What about your initials rotating in three dimensions? You could even add a Zoom option to expand and contract the image, which would involve reading the keyboard and altering the variable *size*.

We have barely scratched the surface of possibilities. Doesn't it make you go all weak at the knees? Hmmm. No, me neither. Never mind, plenty of time for that later. Send me all your worst jokes and favourite recipes via the editor. See you next month.

```
' Wire Frame Modeller
'
' Make window as large as possible,
' then press X, Y or Z. Press the
' spacebar to stop.

'
Start:
  GOSUB Initialise.variables
  GOSUB Define.the.object
  key$=""
  WHILE key$<>CHR$(32)
    GOSUB Draw.the.object
    GOSUB Rotate.the.object
  WEND:END

Initialise.variables:
  DIM obj(99,3):RETURN

Define.the.object:
  num=0
  WHILE moveflag<>99
    READ moveflag,x,y,z
    obj(num,0)=moveflag
    obj(num,1)=x
    obj(num,2)=y
    obj(num,3)=z
    num=num+1
  WEND
  size=60 ' Overall size of object.
  s=SIN(.2) ' The rate of rotation.
  c=COS(.2)
  RETURN

Draw.the.object:
  CLS
  FOR p=0 TO num-1
    m=1.5^obj(p,3)
    xx=size*(obj(p,1)*m)
    yy=size*(obj(p,2)*m)
    IF obj(p,0)=0 THEN GOSUB Draw
    ox=xx:oy=yy
  NEXT:RETURN

Draw:
  LINE(ox+320,oy+100)-(xx+320,yy+100)
  RETURN

Rotate.the.object:
  key$=""
  WHILE LEN(key$)=0
    key$=UCASE$(INKEY$)
  WEND
  IF key$="Z" THEN GOSUB Rotate.Z
  IF key$="Y" THEN GOSUB Rotate.Y
  IF key$="X" THEN GOSUB Rotate.X
  RETURN

Rotate.Z:
  FOR p=0 TO num
    obj(p,1)=c*obj(p,1)+s*obj(p,2)
    obj(p,2)=-s*obj(p,1)+c*obj(p,2)
  NEXT:RETURN

Rotate.Y:
  FOR p=0 TO num
    obj(p,3)=c*obj(p,3)+s*obj(p,1)
    obj(p,1)=-s*obj(p,3)+c*obj(p,1)
  NEXT:RETURN

Rotate.X:
  FOR p=0 TO num
    obj(p,2)=c*obj(p,2)+s*obj(p,3)
    obj(p,3)=-s*obj(p,2)+c*obj(p,3)
  NEXT:RETURN

' Object data is in packets of four:
'
' First:  1 = move to point,
'         0 = draw to point.
' Second: x coordinate (-2 to 2).
' Third:  y coordinate (-2 to 2).
' Fourth: z coordinate (-2 to 2).

' Back rectangle.
DATA 1,-1,1,-1
DATA 0,1,1,-1, 0,1,-1,-1
DATA 0,-1,-1,-1, 0,-1,1,-1

' Front rectangle.
DATA 1,-1,1,1
DATA 0,1,1,1, 0,1,-1,1
DATA 0,-1,-1,1, 0,-1,1,1

' Bottom left line.
DATA 1,-1,1,-1, 0,-1,1,1

' Bottom right line.
DATA 1,1,1,-1, 0,1,1,1

' Top right line.
DATA 1,1,-1,-1, 0,1,-1,1

' Top left line.
DATA 1,-1,-1,-1, 0,-1,-1,1

' End of data marker
DATA 99,0,0,0
```

*Listing III*

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WRITTEN around the inventive graphics routines devised by Dr Eric Graham, this latest version of Sculpt is updated from the 3D package with many new features. It now comes with the animation which was previously only an option.

If you would expect sound effects and visual trickery with windows from such a fancy package, you would be sadly mistaken. It isn't just an ordinary, albeit expensive, art package, it is of professional quality. When booted up the screen is empty apart from three smallish windows.

First impressions are: "What's going on?" At this point the knowledgeable draughtsmen will sigh with satisfaction at the display of puritanical professionalism. No silly brightly coloured and cheerful icons cluttering up the place. They might also notice that the three windows are laid out in first angle orthographic projection. This package means business.

The basic philosophy behind the layout is the same as that in all CAD packages. The three windows represent the view of your work from each plane. By drawing your object in two dimensions in one of the windows you can then give it a third dimension by completing the view in either of the other windows.

*Nic Veitch traces his views on Sculpt Animate 4D, a program which should rays a few eyebrows*

In CAD these views are known as the plan, the front elevation and the side elevation. In this way simple objects can be created, joined together, rotated, duplicated, expanded and so on to produce a very complex final piece.

Sculpt-4D creates all its objects from a number of points called vertices. Edges are drawn between these to create triangular surfaces – the simplest form of surface – from which the final images are calculated. You might think it would take you a long time to construct, say, a teapot out of lots of small triangles, and you would be right. That is where prims come in.

A prim, or primitive, is a three-

# A little light car



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dimensional building block which can be modified into the exact shape needed. It's rather like a sculptor choosing a block of stone which is more or less the same shape as his finished sculpture is going to be, except of course in Sculpt-4D pieces can be added on as well as removed.

For example, a wineglass may be considered to be made out of several tubes – a wide, long tube for the body of the glass, a thinner tube for the stem and perhaps a very short, fat one for the base. When all these tubes have been constructed they can be joined together and bent into shape using the various tools which will be described later. Perhaps a useful alteration would be to close off the first tube so the glass doesn't leak.

There is quite a large selection of prims in Sculpt-4D, including

# rrying



cylinders, tubes, cubes, prisms, discs, spheres and hemispheres.

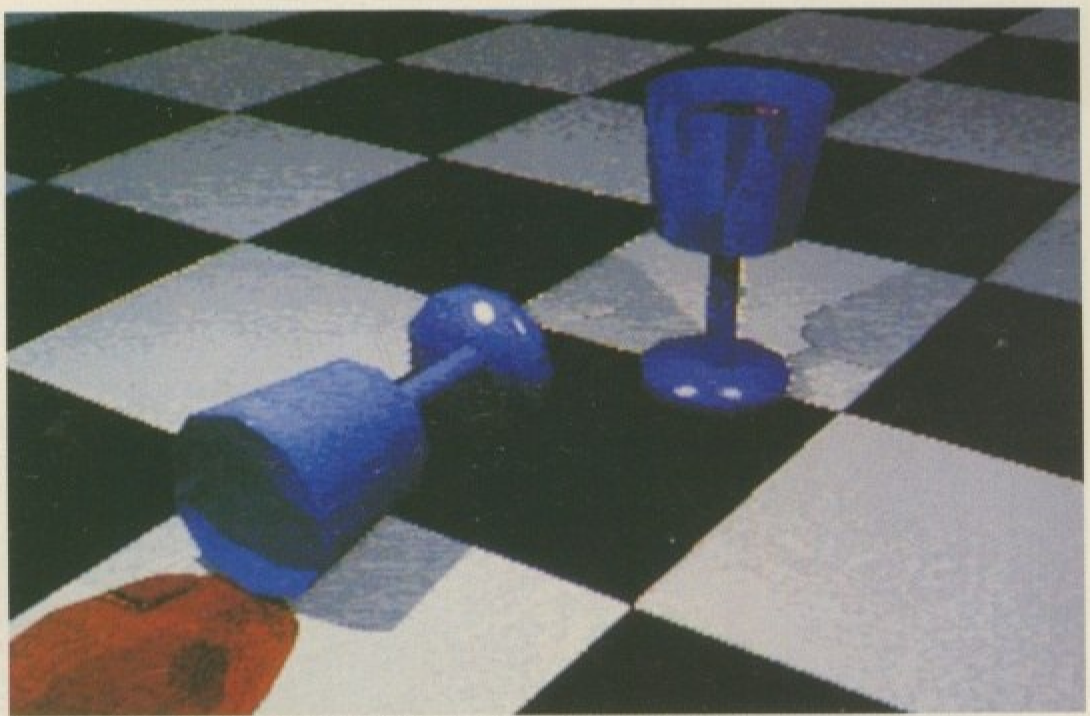
Another way of creating a three-dimensional object is by extrusion. First a two-dimensional representation is created and then this can be drawn out into the third dimension using the Extrude option. This creates a prism with a cross section as defined in the two-dimensional view and is very useful for creating things like wings or girders.

A further way of creating a symmetrical object is to draft a line drawing profile in one view and then use the Spin option. This will turn the profile through a specified angle about the horizontal in that window.

If we had used this function earlier in the example of the wineglass a much more realistic object could have been produced by drawing the profile of the glass and spinning it through 360 degrees.

The spline is another feature worth mentioning – a simple way of drawing a smooth curve using very few vertices, called knots. These can be changed individually to alter the "rate of change" of the curve at that particular point.

Once the basic object has been constructed it can be altered dramatically using any one of the plethora of tools provided. Any part



*A wineglass may be considered to be made out of several tubes*

of the object can be enlarged, duplicated, mirrored or moved. A Magnet option can attract or repel surfaces with effect dependant on distance from the cursor.

The composite parts of an object may be named and hierarchies created within the whole scene, which facilitates joining and altering them but which has further uses in animation.

MANY of the tools most frequently used can be got at via the extra gadgets to be found on the viewing windows rather than having to go through all the pull-down menus. The viewing windows are extremely versatile and can be used to zoom in on any particular face.

Faces can be given "any colour you like" – I knew I could get a Floyd reference in if I tried – and they can also be given a variety of textures, which affects how they reflect the light falling on them and what shading techniques can be used.

Unfortunately there is no texture mapping – which produces effects like mapping pictures on to the surface of spheres – and light passing through glass objects is not refracted.

There are several modes of rendering, or drawing, the image, ranging from a simple wire frame – which can be used as you go along to make sure that you are creating what you wanted – to a complete HAM ray-trace. Image size can also be varied from Tiny all the way to Video.

The different modes take longer the more complicated they get. It is worth remembering that if your image is not going to use some of the advanced texture options, there is no advantage in modelling the object with one of the HAM modes.

To give you an idea, a simple object rendered full-size at snapshot level on a vanilla Amiga took more than 40 minutes, so it's very much a play-by-mail situation.

Thoughtful to a fault, good old Dr Graham has included a small "Caution: Ray-trace in progress" sign ▶




*Faces can be given a variety of textures, which affects how they reflect light*



*This coffee cup took more than 40 minutes to render*

to place on the keyboard for when you leave it over the weekend on one of those difficult jobs. The rendering modes all support Hi-res and Overscan options.

What, you might ask, are we going to do with all of these images? Well that's the most mind-squirmingly excellent part of the whole program.

Animation, as you might reasonably expect, is made up of a sequence of still frames. These frames can be created by taking a scene, storing it in a frame, modifying it slightly, storing that frame and so on, just like taking a series of still shots. This could take a very long time, which is why Sculpt-4D provides a second option.

USING the Global animation option, motion paths can be created for all the objects in your scene. This is where the hierarchy structure comes in very handy. If all of the parts of the objects to be animated have names, it is easy to create a motion path and assign it to that name. In this way a very complicated pattern of animation can be set up in a logical fashion.

That's not all. Using a combination of Global and Frame animation, individual frames can be specified and Sculpt-4D will do the tweening. That is, it will create a series of frames, each differing slightly from the last, which will smoothly animate the objects identified in the first frame to the positions as specified in the second frame.

The animation sequence can be compressed – using delta-shift techniques, where only the difference between each frame is stored – and held in available ram to be animated in real-time.

The package is very simple to use and no previous experience with this type of design software is assumed. All functions can be accessed via the pulldown menus, though the more popular ones have hot keys. There is even an option for setting up keys to do your own favourite operations, as well as to perform macros.

DOCUMENTATION is supplied as a professionally-produced manual and is very useful and informative. It includes step-by-step instructions and tutorials to help you get the most of the software as quickly as possible.

Obviously this product is aimed at a serious user and as such is capable of producing professional results for significantly less outlay than most systems in commercial use today. The addition of external frame stores would be recommended for business applications, and Sculpt-4D comes with driver libraries for use with such devices.

A second version of the software is for use with a 68020/68881 speed- up board. Since this board can accelerate the animation by, at the very least, a factor of two, it is highly recommended if you plan to use Sculpt-4D to produce any serious amount of animation.

*Sculpt-4D will run on an A500 or A2000 with at least one meg, but although the package says it needs two floppy drives it was found to run quite happily with one.*

## REPORT CARD

**Sculpt-Animate 4D**
**Amiga Centre Scotland 031-557 4242**
**£368**

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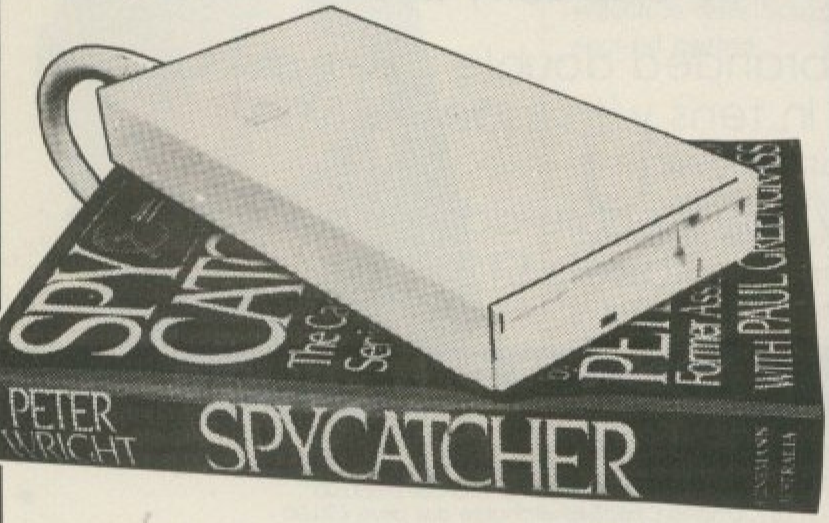
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ERGONOMICS, man in tune with his world, a scientific word that means the difference between leaning back on the chair hooking open the fridge door, and falling flat on your face. When is someone going to design a PD workstation? When are we going to start calling a workstation a desk again?

Like designer software, the Integrated Dataprocessing Workstation was thought up by some wee spotty boy with a degree in talking loudly about art. Not a finnick of use to man nor 'puter. These Formica and stainless steel tea trolleys with little trendy channels so you can't find your leads were designed for administrative buyers to mix and match with the South American Mongoose curtains and the Christian Dior bidets.

Take the top off a refectory table, set it astride a four cubic foot fridge at the right and freezer at the left, leave room for a one man microwave, a bubble, plop, plop, bubble and the job's half done. Throw in an anti-spike plug for good measure, a multimeter to measure good and all we need is an Amiga and a couple of quid for software.

Victor "Know-all" West, the man who fills the calor tank, told me confidentially: "I wouldn't buy one of those things. The software costs 30 quid a time. I could get three games for the BBC Micro for that".

Those early few months when the Amiga had everything but the software was make-or-break time. A lot of micros went to that great random access in the sky for lack of softies, but because the Amiga has a friendly system and will bend itself to any application, people were prepared to write for it. Fred Fish, whose collection of over 200 PD discs is world famous, takes up the story:

"We had the Amiga and we knew what it should be able to do, but there wasn't any software to do it. So maybe I'd write a little and someone else would write a little and these programs would be swapped... and the collection just grew".

I asked Fish what I would get for the $55 I was sending him. "Pick any 10 from the collection at $5 a-piece and add $5 to cover the airmail".

"Yes, but what can I have on the discs?"

"Just about anything you want."

Chatting to Fish was an education. "What happened to the Sinclair and the Torch?" he asked. "A couple of years ago we were looking to Britain for innovation, but no more", I mumbled something about rising inflation and quickly changed the subject.

Preferring his Porsche 928 to the stateside alternative of a Corvette or Camaro, Fish seems to be that ▶

# SWEET PD

*Fat Angus goes startrekkin' through the world of free software, taking in Arran, Arizona and Wakefield*



*Hey babe, take a walk on the compiled side*

◀

unusual creature who has attained a balance between technology and nature. Living in Arizona puts him within yelling distance of the Grand Canyon. Hiking the canyon, climbing and fishing fill his leisure time.

The Amiga surfaced when he was at a "serious" age for computers in his late thirties. Starting in 1985 with a 256k A1000 and adding a 512k cartridge, Fish describes his first Amiga as a "neat little computer".

"With its ability to do several things at once, the Amiga is the way to the future", he says.

"The computer is the appliance of tomorrow. If you'd said in 1955 that one day everyone would need an icebox, you'd have been laughed at. Everything you buy today is chip controlled. Soon we will have a computer as a major household appliance quietly controlling the stereo, lights, air conditioning and video by sending pulses down the mains".

That's the thing that sets us apart from the MSdos and CP/M machines. Our PD is colourful, useful, well documented and there's lots of it, not just from the USA and Canada.

JUST rushed in from the land of Bjorn Gustav Sven Laarrs and Stig is Star Trek. Eric Gustafsen put this one together on his own using a few borrowed memory routines and a digitiser. Living on three discs, it needs 1 meg and anything less than two drives is suicidal (he says from dire experience).

Your mission is to bravely go where Gene Rodenberry last set foot, to explore new vistas, quash new monsters and generally have the best five year mission of your life.

After the Yugoslav Dance of the Swapping Discs and the "I do solemnly swear to burn everything if Paramount ever try to do it commercially", it's into the game. Mission, I mean.

You click on the crew and go to sub-screens with their various responsibilities and choices. Pick a planet and let's go fry an entire lifeform. It runs true to the TV series, with an authentic feel to it. Snatches of digitised speech and sound add to the realism. The only letdown is the combat phase, a sort of geriatric shoot-'em-up with lock-on missiles.

Scandinavia, I forgive you the birch twigs and wait with bated breath for your next offering.

Star Trek was sent to me by Tony Thompson of George Thompson Services, who himself is no stranger to intergalactic travel. Caught by the storms that blew away the turgid South East of England a couple of years ago, Thompson moved GTS north of the border overnight.

"With structural damage and no power, we needed to stay in business. The only way to do that was to move fast," he muses.

While other firms licked their wounds and called for the assessor, Thompson, his wife and a caravan of camels moved north to Arran, a western Scottish island. It seems a strange place to work from but "Peace, quiet and priority postage are just what we need", he says.

The planning paid off recently when Arran got the worst dose of ▶



*Like a bridge over tribbled transporter*

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weather for 40-odd years, losing power, communications and roofs. Emergency generators clicked in and it was business as usual within a few hours.

Paying tribute to the local organisation Thompson says: "Out here where things are isolated we have to be prepared. If we had been this ready a couple of years ago, we might still be in the South, perish the thought."

As well as Star Trek, GTS sent me the Chet Solace Shareware Extravaganza. Pronounced "chase olay" it is a collection of useful utilities, games, sillies and home to the Animated Pointer progette, a pointless – not pointerless – but fascinating wedge of code.

PUBLIC domain discs are a mish-mash of many things. A lot depends on what the compiler has managed to trawl in the last month or so. While it would be nice to have one disc of games, one of languages, one of utilities... it doesn't normally happen like that.

Just arrived through the post is the solution to this. APDL of Sheffield has sent me a selection of its recompiled discs. No longer do I have to look behind the C for the zaps. Nor do I have to move Forth to find Comms.

On disc 17 you get three spreadsheets, a database, a wordpro with mail merge and enough document files to squeeze a printer ribbon dry. Disc 25, Communications, sees six different terminal packages and some pretty nifty icons.

The games disc is number 15. It has a version of Backgammon that I can beat, but only just and not every time, making it a program to go back to. Othello is in isometric 3D – colourful but infuriating when it takes more time to think than a ZX81.

Bouquets of heather and wild ferns to APDL for taking the initiative and bundling similar programs, but a wee smack on the handies for taking the trouble with the icons and forgetting the autoboot.

SAMPLING. Put the specimen bottle away, not that sort of sampling. When Casio brought out the SK1, a keyboard with "digital sampling capabilities", every fool with £100 suddenly became musical overnight.

Or so they thought. Once the initial novelty of m-m-m-m-musical swear words and two-second Mel and Kims wore off, we were left with a useful way to generate music and sound effects.

Somewhere under the cream slanty bit is a chip that lets the Amiga join in the fun. There are commercial programs that allow you to sample in the comfort of your own bathroom, but by far the best examples of sampled music are those on PD and demo discs.

Some of the finest are 17 Bit Software's Jukeboxes, but the Wild Copper demo is the most proficient of the bunch. With dancing pointers and scrolling messages galore, this demo on disc number 176 takes multitasking to task by running the current music in the foreground while loading the next piece. The join becomes almost as transparent as Brucie's hairpiece.

Without a doubt the most stunning discs you can get from 17 Bit are a couple of demos from Imaginetics. First came The Walker, a two meg animation of a Star Wars Atat. It's called that because you shoot atat. Only joking.

Not many people could run The Walker over here, two meg being that rare, so 17 Bit converted it to run on 1 meg. And now, from the same stable, comes the trailer for The Walker II. Yes, you heard right, a *trailer* for a demo.

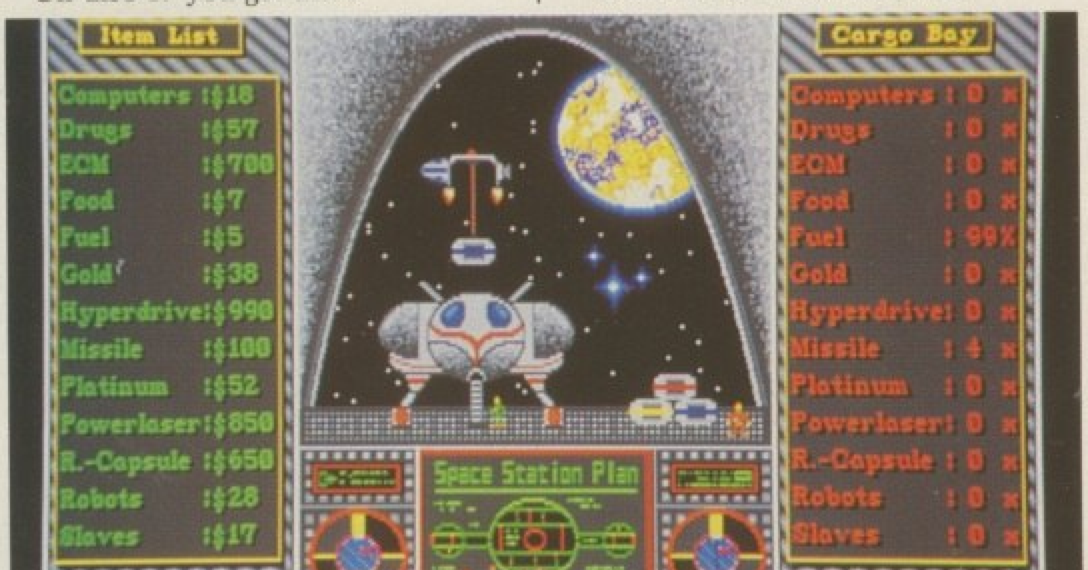
The small version has again been cut down from the full 2 meg one, but this time, as a result of 17 Bit's nagging, Imaginetics has produced both demos itself. What can I say? It makes you go "Wow!" a lot more than 240 volts in a tin bath.

Have you noticed that Amiga PD is directional? Germany, France and to some extent Belgium and the UK are churning out stereo sampled music and naughty scrolling messages, while from the other direction, America and Canada, comes all the serious business and utility software.

The exception to prove the rule must be the northernmost parts of Scandinavia where the Star Trekkies come from. Must sound really weird: "Bjorn, set phasers on stun. The Klingons have raided the sauna and stolen Sven's birch twigs and Scandahoovee buffet..."

THERE comes a time in every column when its author must get from one subject to the next smoothly. This is how it is done. While you are reading these words a subtle transition is taking place. We've left the last paragraph 14,000 miles behind. Fasten your seatbelts and extinguish your cigarettes. Your captain and crew hope you enjoyed the flight and will travel SweetPD again.

A long plane journey west via Singapore's Bugis Street brings us to good old Deutschland, venue for Shicklegruber's European Tour 1939



*Desmond has a barrow in the outer space*

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Sweet PD

to 45 and home of the new German game, Return To Earth. Must be why it's been so quiet since 1966, they've been off invading other planets or suchlike. On with the story.

I've heard of raining cats and dogs, but rain a wolf? Oh, I see, that's his name, Rainer Wolf. Anyway, it's either Shareware or PD – it says PD in the letter and shareware on the disc. It costs DM20, which isn't as much as it sounds, but a veritable chunk of my filthy lucre.

Deutschland, Deutschland, uber alles. Mit zusammengeschlossen galaxien hinweg. Hang on a minute. What's a galaxian hinweg?

The covering letter says: "We will appreciate if you can bring a small test of this public domain game". OK, anything to oblige the alien alien.

If you like menu clicking and making choices on colourful screens, then this is the game for you. The "read this first" icon divested the dissertation about galaxian hinwegs, whatever they are, in German. As I did French, Latin and Gaelic at school, it means nothing to me.

After finding my way into the game, a task in itself not simple with only foreign instructions, I enjoyed randomly clicking on the choices and trying to work out what the overlay screens did. I must have done something right. I got the docking screen. Frantically pulling on joystick and moving mouse seemed useless. It docked automatically. Bah. Grrr.

The sound would have been impressive 12 months ago, but now everyone knows how it's done it comes across as standard sampled stereo blasts and pings. However, putting on my junior highland space cadet's kilt, I sallied forth for a session of space trading and alien zapping. A roaring departure from the launcher – best through headphones – and a viewer screen with stars moving towards you.

More about this next month maybe after I've had the instructions translated by Constance McAndrew. I know she doesn't sound German but her parents were fans of D. H. Lawrence.

Finally, 12 out of 10 to Mark Astley of Salford who has won his industrial tribunal on a technicality. Caught in a pub by his boss after having rung in sick, he produced two 3.5in floppies infected with Byte Bandit as evidence. On cross-examining the secretary who took the sick message, the wording "Off due to a virus" with no qualifier was taken to be ambiguous.

He's either very lucky or a good storyteller.

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# Amiga Arcade

## All in a bay's work

THE European Computer Trade Show saw the launch of new software house Screen 7. No, I don't know what it means either, but somebody spends a long time thinking up these names.

The company has already lined up a host of new releases for summer. First off is ***Jaws***, the computer game of the 1970s film that wasn't as good as the book and had a different ending anyway. In keeping with tradition, the plot has changed again.

A monstrous great white shark is terrorising the beaches of Amity Island. A grim discovery confirms the worst – he's out there and he's hungry. So far so good.

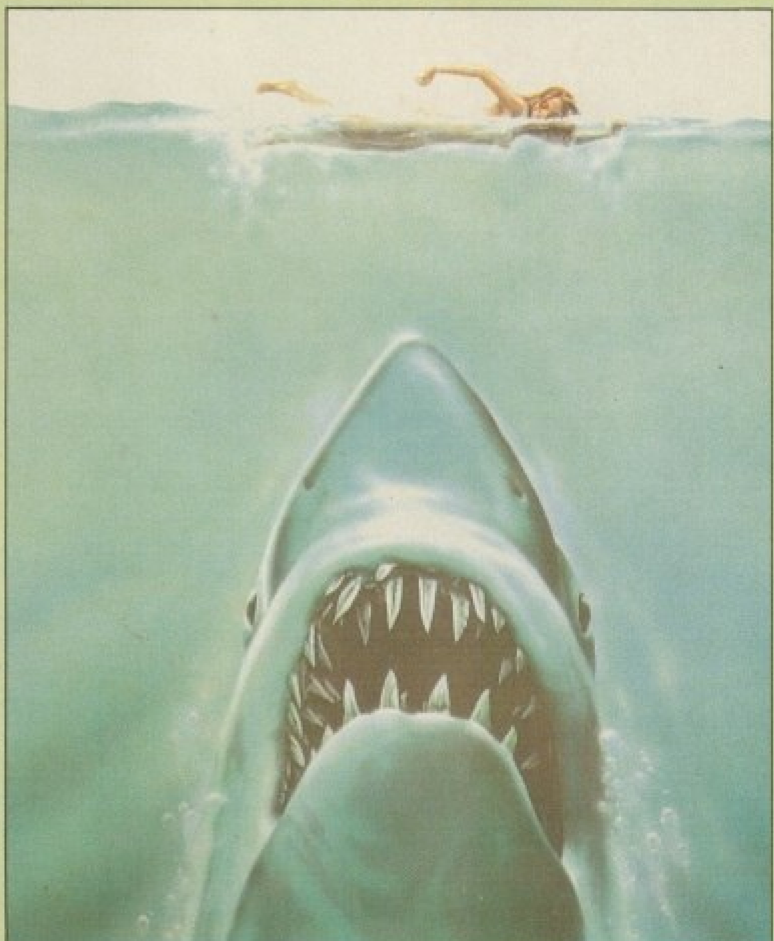
In a bid to save the island's tourist trade, Mayor Vaughn engages a professional shark killer from the mainland.

OK, we can live with that. Unfortunately, on the way to Amity a fierce storm wrecks his boat and the means of Jaws' destruction is scattered throughout the caves and chasms of a menacing sea world. Huh?

While Jaws roams the clear waters bringing a swift and horrible end to unwary swimmers, you must go deep sea diving for the bits of your bedraggled boat. This isn't Jaws, it's Raise the Titanic!

Other Screen 7 titles for release in July are ***Steigar***, an arcade game based around the exploits of a mercenary helicopter pilot, and ***High Steel***, in which you must overcome all obstacles and dangers to build the framework of a huge skyscraper.

Screen 7 promises "quality and lasting gameplay". No mention of originality. Still, two out of three ain't bad. We wait and watch with interest.



*The plot may change, but the picture remains the same*

IN March's news pages we held an impromptu competition to win five Motormouth Weird Dreams T shirts. The closing date for entries of April 1 had a few of you worried that it was an April Fool's joke. Come on, would we do a thing like that?

Course we would, but not this time. The five lucky winners are: Philip McConnell of Armagh in Northern Ireland, Dave Jackson of Preston, Graham Roberts of Neston in South Wirral, Shane Clarke of Ros Muc, Co. Galway, Ireland and James Mercer of Northolt, Middlesex.

Well done chaps, keep watching these pages for more T-shirt teasers.

## Frenchies in a spin



*Bio Challenge, four difficult levels from Delphine Software*

DELPHINE Software is the label newly formed by Paris-based Delphine Records. Palace Software is handling sales and marketing of Delphine games outside France.

The first release is ***Bio Challenge***, an arcade style game featuring lots of small blobs, a number of large blobs and one excellently animated robot which spins like no robot you've seen before.

The object on each of the four levels is to kill the various baddies by squashing them, rebounding the small blobs into them or finding armour with special powers.

Between levels lurk the gigantic, evil guardians. You'll need to collect plenty of ammo on the previous stages to see the backs of these dratsabs.

The game has been written by Paul Cuisset and Denis Mercier, the team reknowned for the fast moving 16 bit version of Space Harrier. Not suprisingly, the programming in Bio Challenge is technically impressive.

The levels scroll smoothly in the fashionable parallax way and Delphine claims more than 160 colours displayed at the same time instead of the more normal 16 or 32. We'll leave you to check up on that one. Review next month.

## Gallup Chart

| | | Last Month |
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| 1 | Falcon<br>MirrorSoft<br>£29.95 | 1 |
| 2 | Super Hang On<br>Electric Dreams<br>£19.99 | NE |
| 3 | Lombard RAC Rally<br>Mandarin<br>£24.95 | 5 |
| 4 | TV Sports Football<br>MirrorSoft<br>£29.95 | 2 |
| 5 | Denaris<br>US Gold<br>£19.99 | NE |
| 6 | War in Middle Earth<br>Melbourne House<br>£24.99 | NE |
| 7 | Kristal<br>Addictive<br>£29.99 | NE |
| 8 | Gauntlet II<br>US Gold<br>£24.95 | NE |
| 9 | Sword of Sodan<br>Gainstar<br>£24.95 | 3 |
| 10 | R-Type<br>Electric Dreams<br>£19.99 | NE |

# All the latest news on the games software scene

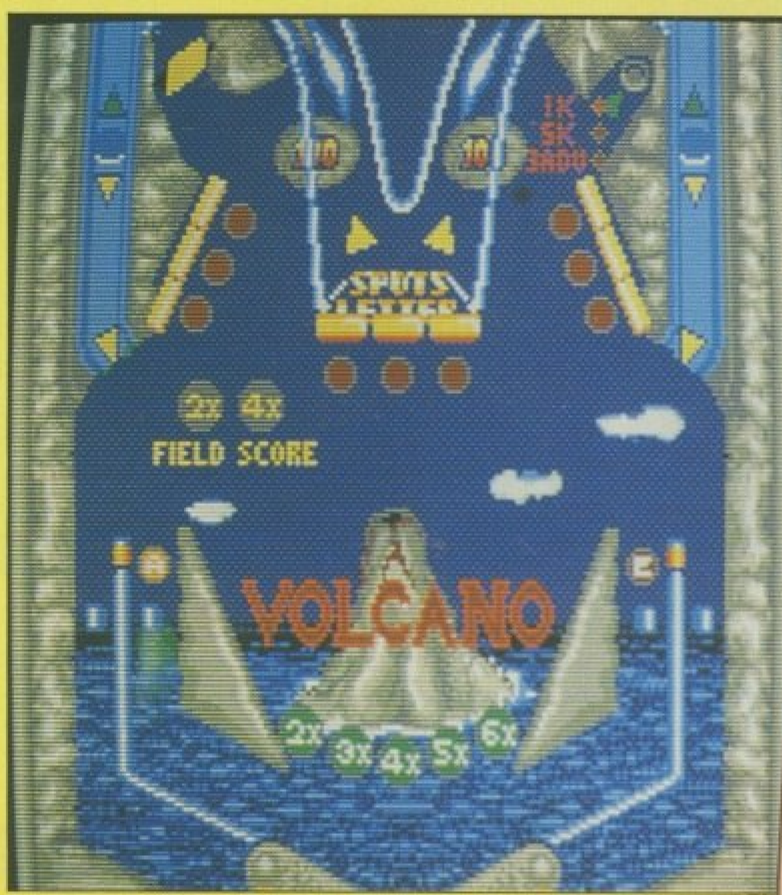
## Nudge, nudge, know what I mean?

THE silver ball has become a bundle of pixels in the latest game from Sega. Timescanner offers the playability of pinball with the graphics scope of an arcade game.

The Amiga version from Activision includes nudge and tilt among a number of special features, such as multitudinous balls, six flippers and a special breakout game bonus screen.

Computer games are not limited by the constraints imposed by physics, so the pinball playfield is extra-long, scrolling to fit in an area below the flippers. Warps and tunnels take your ball through the four levels of Volcano, Saquarra, Ruins and Final.

Out now, Timescanner will cost £24.95, which is a fiver more than the ST version, so it damn well ought to be better than a naff port.




*Activision's Timescanner, the ultimate pinball machine? Out now, £24.99*

## REVIEWED THIS MONTH

- Batman – The Caped Crusader
- Deflektor
- DNA Warrior
- Emmanuelle
- Gauntlet II
- HKM
- I Ludicrus
- ISS
- Journey to the Centre of the Earth
- LED Storm
- Scorpion
- Space Harrier
- Tiger Road

## MAX HACKS

- Deflektor
- Jug
- Last Duel

## Dragon's slayer

WHEN the boys at Probe aim to out-do Dragon's Lair, they do it with style. An as yet ***unnamed project*** is underway from one of England's best programming teams, Dave Perry and Nick Bruty.

They identified the main problems with Dragon's Lair as being lack of plot and limited animation and are to produce a compressed screen type game to blow your socks off.

They are attempting to get the whole thing in a 512k machine, but suspect it will fill four or five discs. The animation – with around 60 frames per scene – has been drafted by professionals who have worked on a number of full length feature films, including Roger Rabbit.

The plot casts you as a princess, beautiful natch, who awakes clad in a skimpy negligee, gets sucked through a mirror – what an original idea – and emerges in a weird dream world as a mean vixen brandishing a Sodan-like suit of armour. In the distance there is a castle which eminates evil and is destroying the world.

Your quest entails reaching the castle and saving the world, traversing mountains, water and awesome graphics.

This major project is still some way off. Look out for it.

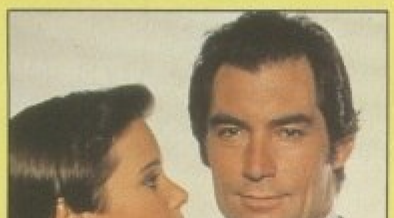
## Licensed to drive on the wrong side of the road

QIXEL is a new development team which has taken on the latest mission to convert James Bond to the micro screen.

Based on the new film ***Licenced to Kill***, the game follows the plot of the film with JB using a crop duster to run the drug smuggling Sanchez and his petrol tanker off the road.

Other scenes involve an underwater battle which results in JB harpooning a catarmaran's pontoon. When the pontoon starts to move, JB realises it is a helicopter and has to waterski barefoot behind the craft avoiding the pilot's gunfire and climbing along the tow rope.

If the game is half as exciting as the film, it'll leave you shaken and very stirred.





*Timothy Dalton shows off his new holster in a promo still for the latest Bond movie, Licenced to Kill*

# INCREDIBLE SHRINKING S

## Poetry in motion



COLONEL-IN-CHIEF Matt Ridley of the Sphere Corps was sick of flying a desk and was in severe danger of being referred to a trick cyclist. It was the 9 till 5 that did for him – it had been years since he'd piloted a Fighter Sphere, especially on the Death Run training arena at Sangfalmadore.

The Death Run was now really living up to its name. Bits were missing and the generators had gone crazy, making real deadly enemies. Still, better to die in combat than to keel over on the morning shuttle, always 11 minutes late.

The controls felt oddly familiar in the Colonel's hands. How the Spheres had changed since his day. The mass and volume used to be set manually but now everything was preset using the Tectronic Tiles on the arena floor.

Level one of the Death Run fell easily; after all, was not the Colonel an expert in his day? At least all the details were still there – the Bonus and Penalty tiles, the Chaotic Bouncers and the Shield Energisers. Each one – except the Penalty – could be used to some advantage if the pilot knew his up from his down.

But it had to happen, and happen it did on level seven, which just happened to be the last and most hazardous level. The Colonel's Sphere decided that it was time to pack in – no fuel and only enough shields for a few hours.

# EMMANUELLE

## English as she isn't spoke

*Emmanuelle*
*£19.99*
*Tomahawk*

Sound
Graphics
Gameplay
Value

Overall – 37%

HERE is the secret of how to get a mediocre game noticed: Add a bit of implied sexual interest. The punters will flock to it in droves, even if it has all the charm and sophistication of a road accident.

Emmanuelle is based upon the infamous book by Emmanuelle Arsan, which is all about her, um, exploits in the more, er, lively parts of Brazil. Your task is to find the elusive Emmanuelle and return with her to Paris.

You can travel between the major cities of Brazil by plane, or back to Paris if you give up or find Emmanuelle. Hotels are the major rendezvous points, where you can get information about various characters or even Emmanuelle herself. Conversations between yourself and various ladies of usually dubious repute are necessary to get further information or services which won't do your energy level any good at all.



*A couple of beach bums*

Three conversation options are open at each stage. One is the right one, one is the smooth one and one is the crass one. Since they're all translated from the French, and badly too, all turn out to be the hilarious one.

The casino can either make you or lose you all the money you need. Lucky charms can be bought in the poor part of the town, the favelas. The most expensive item is a toucan – I suppose you can give it as a toucan of your esteem...

The game is mouse controlled with the really annoying trait of no multitasking. Once the action has started there is no way to do anything else but wait – the lift movement in the hotel takes a while and very little happens during that time. Yawn.

The beach is the funniest part out of a general theme of unwitting crass humour. You can bask about on the boats or liaise with the various female characters who laze about on the sand. The graphics and animation here are meant to leave nothing to the imagination. Unfortunately both are of such a low quality that virtually everything *is* left to the imagination.

The beach's best part must be the fight scenes with the various male baddies. It takes the standard combat game scenario but with a bit of a dif-

# NGSPHERE

It would have to be a pretty sharp operator to get to the Colonel, and since you're the only sharp operator in the vicinity, pretty or otherwise, it's all up to you.

Spheres can be controlled via normal or isometric control, the latter being slightly less confusing initially. Some of the Tectronic Tiles are so fragile that a Sphere at full mass would plummet through. Others have become critically unstable and mutate into Sphere Vapourisers.

At least you can place ammo dumps wherever you need them, although only four are allowed per level. As there as four plates per level in seven levels, and the first isn't exactly easy, there is a tiny bit of a challenge here.

ISS has been written by someone who knows a thing or two about motion. The way the Sphere spins round the periphery of a force field is beautiful. The movement and scrolling are synchronised so neatly that they don't intrude on the gameplay at all. Fours Field – the development team – does know how to produce some nice metallic effects, but the graphics work adequately rather than astonishingly.

What does deserve special mention is the theme tune. Imagine Lalo Shifrin, famous for the Mission Impossible theme, meeting those zany funsters The B-52s over some naughty sweeties. Get the idea? It's a real pity that the rest of the game effects are just boinks, thumps, pows and crashes.

**Stewart C. Russell**

*Incredible Shrinking Sphere*
*£24.99*
*Activision*

Sound
Graphics
Gameplay
Value

**Overall – 76%**



Peek-a-boo . . .

ference. You are the seven stone weakling on the left and the bear on the right is your opponent.

Unless you have had expensive martial arts training your weapons are the face slap, the "Look, what's that up there?" or pulling down the opponent's trunks. The two distraction techniques are accompanied by neat sound effects, especially from the ursine opponent. I laughed like a drain all the way through this bit.

Nobody's going to get any kicks from Emmanuelle. The graphics, animation and sound are generally bad with the gameplay tedious and repetitive. Tomahawk should have forgotten about the main dubious objective and expanded the beach fight sequence into a full game because it's the only bit which raises the boredom level off the lower stop.

This kind of production shouldn't really be encouraged – we're deviant enough wanting to waste 90 million types of aliens a day. What would games be like if they really had a high *score* table? Are we so sick that we need this kind of synthesised stimulus? Do we not have enough critics without the Whitehouse gang muscling in on the act? Why oh why oh why do I ask these crassola Points of View questions?

If you need this kind of thing, you're probably better off going back to the top row of the magazine rack. It would be cheaper and magazines don't get viruses, as a rule. Live in the real world – it may get bad sometimes, but at least it doesn't crash.

**Stewart C. Russell**

# DEFLEKTOR

## Beam in some imagination




*By jove, I think he's got it!*

MOST of the better games contain at least an element of real life, something you can relate to as you weave your way through an intricate web of death rays or make a last ditch stand against the ravaging hordes of Zod the Unwashed. It's what helps you to pretend that you're there in the thick of the action rather than tucked up in bed at 19 Mandela Terrace, Penge.

Some games, however, make no attempt at realism. Take the idea of using a powerful laser beam steered by a series of remote mirrors to destroy a large number of well protected targets screened by a jumble of intervening objects.

Totally unbelievable, right? Nobody but a real cowboy would think of trying to do it in real life. And yet that's just what Deflektor is about. The only way this scenario would have been more unbelievable was if the targets had been moving at high speed. But that would have been incredible.

The aim is to destroy all the targets on each level before your laser beam runs out of energy. It can be steered by a series of mirrors which can be rotated to redirect the beam. When all the targets have been destroyed, the level is finished by steering the beam into a special receptor to complete the circuit.

It moves through paths of increasing complexity. Some of the targets can't be reached directly and require the beam to be diverted through repeaters, which absorb it at one point and discharge it somewhere else on the layout.

Care must be taken not to feed the beam back on itself otherwise an overload can result – if not corrected quickly this will lose you a life. You start each level with three lives; lose them all and its back to the beginning.

This game needs good coordination, speed of thought and lots of imagination to thread a route to targets that remain frustratingly out of reach.

The graphics are detailed and colourful, but are too static to be considered exceptional. The music is excellent, just right for setting your pulse racing as your laser eats up the last dregs of energy with two or three targets remaining.

And that's all there is to it. Fun to play in short bursts at intervals, but not one to keep you going all night.

**Mike Rawlins**

*Deflektor*
*£19.99*
*Gremlin Graphics*

Sound
Graphics
Gameplay
Value

**Overall – 73%**



*Erm...and that's all there is to it*

# SPACE HARRIER

## That was a sprite, that was



*There ain't mushroom for mistakes*

INCREDULITY has been expressed at this game, especially in its original arcade form. The hydraulic version is the only arcade machine in which there is a very real danger of personal damage – falling off is no fun.

Contrary to popular belief, Space Harrier does have a plot although not a very good one. Apparently the fantasy zones have gone weird and need cleaning up. They always were a bit weird, but this time they really have had a serious wack attack.

Enormous things straight out of a deranged head rush towards you and it's a good idea to get rid off them asap. You see, it's either them or you. And since you paid for the pleasure, it's got to be them.

You are a small fair haired chap toting an enormous pulse laser held aloft by a powerful jetpack. Everything scrolls towards you in the manner of all recent Sega games, but at an unbelievable speed.

OK, some of the time all that's happening is the checked landscape moving, but other times there are a lot of large sprites moving too quickly to see, let alone count.

Bits of the scenery don't give in to your luminous lentil laser and are also too high to fly over, so very fast flying out of the way is needed. At the end of each level huge guardians zoom about nastily doing their best to remove a life or six. These always have a weak spot – finding the technique is the difficult part.

The programmers have seen fit to include a mouse option, which is not quite as accurate as the joystick but much faster. Control can be switched between the two devices instantly, so it's possible to play certain parts of the game with the correct controller.

The first level, Moot, is really a test of control and memory. Everything can be shot but all the waves must be learnt or you'll lose a few of your nine lives.

The second level, Geeza, is best tackled low. Two-thirds of it can be handled without moving. Level three, Amak, needs fast, high flying and the double-headed dragon at the end is a real killer. From Ceciel – level 4 – things get harder. Forests of impenetrable pylons, rolling dodecahedrons, nasty big things and all.

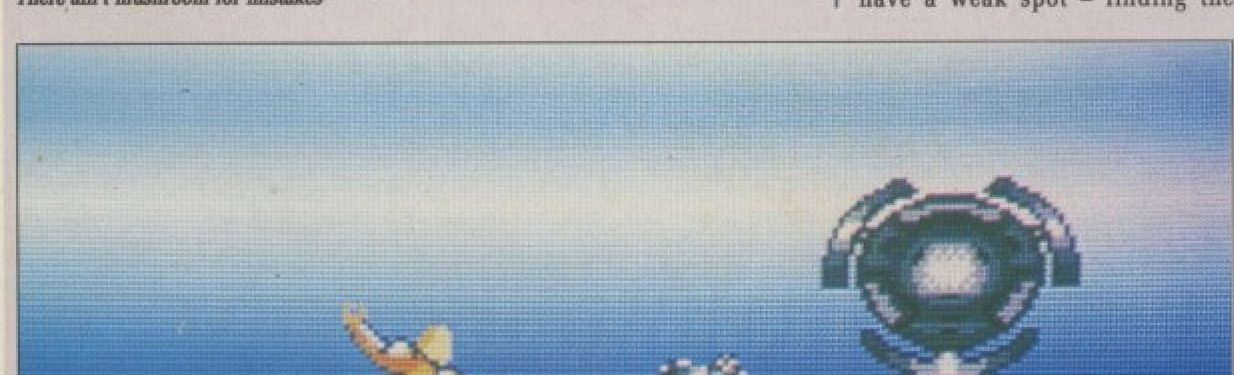
The screen is overscanned so you really feel "in" the game. The sound effects and tunes have been lifted straight from the arcade machine, including the rambling, tuneless bit once you've run out of lives. The only bit they shouldn't have lifted is the appallingly sampled "Get Ready" at every new life. I've heard better on a Spectrum. Honestly.

The stereo is used to locate your player. If he moves to the left, the majority of the laser noise comes from the left speaker.

Maybe it's been done before, but it's a real cute touch. Actually, the arcade machine's sound wasn't all that great, so I guess the programmers are just working to brief.

Amiga Space Harrier is the closest thing to the real machine. The speed and clarity of the sprites is totally astonishing and if the mouse option is used the main sprite moves too fast to follow. If you feel in need of an adrenal hotshot coupled with some senseless violence, the prescription is this game.

**Stewart C. Russell**



*These balls have some bearing on life and death*

*Space Harrier*
*£19.99*
*Elite*

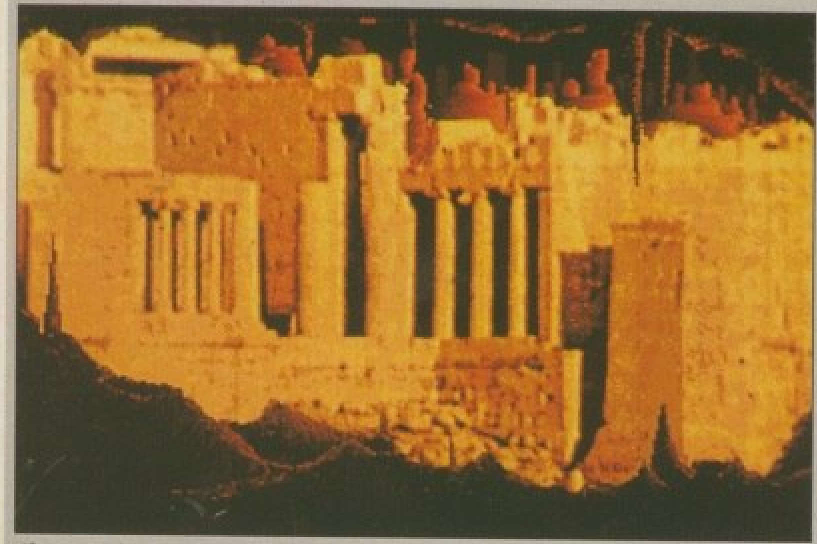
Sound
Graphics
Gameplay
Value

**Overall – 87%**

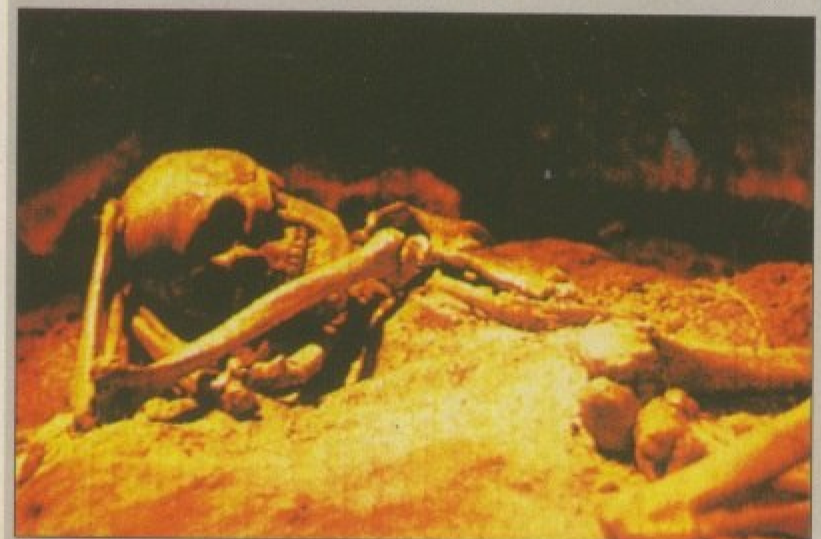

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Atari ST screen shots
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# JOURNEY TO THE CENTRE OF

## Sound and graphics great. Trip boring



*Change to the Central Line at Baker Street*



*The head bone's connected to the, erm, ground*

NOT read Jules Verne's masterpiece? Neither have I, but I am assured that the plot of the game is reasonably similar to that of the book, which has also been the subject of several bad films.

You can play one of the heroes – Professors Gunnarson, Bourdon, Rutherford or Rossi. It's June 1870. You find an ancient Icelandic manuscript that tells you to go into the crater of Sneffel's volcano, which supposedly leads to the centre of the earth. 3,000 ft below ground a rock fall separates you from your fellow scientists and you're on your own until you find them again.

Given a rough map of the area, you can click on four arrows to move in that compass direction. A description of your position is flashed on screen for a few seconds each time.

There are icons to click. One allows you to grab an axe and a stone, break it open to determine the local geology and hopefully deduce things about your surroundings.

Another lets you examine your body and apply the contents of your medical chest to various injuries. To start off with, you are bruised from the rock falls, have a splitting headache and a stomach poisoned by fumes. Your condition quickly deteriorates with fire and brimstone everywhere. You must find food and water quickly; meters at the bottom of the screen tell you how ill you are.

A third is a big R – think about it – and a fourth lets you sleep, complete with snores, whistles and alarm clock.

Your position can be saved and loaded, and there is a final icon which provides one of the few pieces



*I know I said Deep Pan, but . . .*

# LED STORM

## Take a terminal road test

| | |
|---|---|
| *LED Storm* | |
| *£19.99* | |
| *Capcom* | |
| Sound | ██████████████ |
| Graphics | ███████████░░░ |
| Gameplay | ███████████░░░ |
| Value | █████████░░░░░ |
| Overall – 82% | |

TIME to put on the driving gloves and crash helmet as LED Storm puts you at the wheel of the "ultimate devastation device", again in the form of a leap-frogging red sports car.

For some unexplained reason you have to drive your car through several sections of deserts, tunnels and forests, each loaded with a quick whirr of the disc. The graphics for each stage contrast one another well and some even look very pretty as they fly past.

This vertically scrolling racing game has little in the way of originality but makes up for it with some good gameplay and smooth graphics. The playing area is small but the action happens so quickly anything larger would be missed.

Your energy depletes rapidly but can be replenished by running over jerrycans of petrol. Other bonuses float down on balloons from passing spaceships.

Concentrating on trying to catch such bonuses has caused many a terminal collision with large stationary objects, usually mountains.

When this happens the equivalent




to the AA man appears in a little hoverbuggy and presents you with a brand new car. What a nice man.

What a very nice man.

I wish he could do something about the horrible frogs which cling

# )F THE EARTH

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ces

of animation. You dash around the bottom of the screen collecting water which drips from the top, avoiding hot cinders which evaporate any water you have.

When you are poisoned, fall down a chasm or whatever, there is a very realistic scream and you end your days in a pile of dust and bones.



The graphics are superb. HAM mode is used to display everything from stalagmites and caves to your skeleton. The sound is equally good, the effect of steps and voices echoing round the caves is very well done.

You really need two disc drives – there is a lot of swapping with one, particularly during the title sequence, which was a little sticky with my review copy – sometimes I had to re-insert a disc two or three times before it was recognised, which made the game very slow and frustrating.

Despite the excellent graphics, Journey to the Centre of the Earth is boring. There is not enough for the player to do and too little variety in what appears on screen. Interest quickly flags as a result.

**Alastair Scott**

*Journey to the Centre of the Earth*
*£19.99*
*Rainbow Arts*

Sound
Graphics
Gameplay
Value

**Overall – 66%**

on to the car and slow you down. Best way to avoid them is to jump over them, but once they get a grip you can only shake them with some serious manoeuvring.

The highways are in a terrible state of repair, with large sections only traversable by using the ramps kindly left out to jump over the gaps with. Miss the ramp and it's the scrap heap.

As on most roads these days, lots of psychopathic drivers try to get in your way and generally make a nuisance of themselves. Unlike real life, LED Storm offers the option of jumping over them – which would come in very handy in traffic jams.

On your side for once, the local Department of Transport has placed arrow direction markers at strategic parts of the road to warn about sharp bends. These must be obeyed to avoid major confrontations with the crash barriers, incurring the associated time penalty.

The music is outstanding. Each stage is accompanied by one of several tunes, ranging from a funky distorted guitar rock piece to a weird new-age synthytune. All good stuff, and for a change it adds something to the game without getting up your nose after the first three plays.

It is worth booting-up the game just to hear the music and burn off a few trucks.

The title confuses me. Apparently LED stands for Lazer Enhanced Destruction. Apart from the spelling mistake, there just aren't any lasers...

**John Kennedy**

# HKM

## Due for an overhaul



HUMAN Killing Machine is the meanest son of a snake you've ever seen, as the blurb goes. You could be forgiven for wondering whether this description refers to the character or to the person responsible for foisting this game on an unsuspecting consumerate.

It begins in the fabled Temples of Moscow with our hero, Kwon, being set upon by a nasty Red guard. So much for glasnost. Fortunately, Kwon is not only a notable miser of reptilian extraction but is also tough and mean.

This would be more believable if not for the fact that on the second level he is easily dispatched by a dancing border collie.

Kwon goes on to face a selection of unusual adversaries including the horribly bemuscled Maria, a drunken German, Arab terrorists and the cunning master bullfighter Miguel and his pet fighting bull, Brutus.

If Kwon manages to defeat his opponent with ease he will be able to take a greater deal of punishment in the next round. Exactly why he is travelling around notable trouble spots like Spanish bullrings and German bierkellers is never explained. Pity.

The gameplay is similar to the karate games of which there was a spate a few years back on the Spectrum and C64. Kwon wouldn't look out of place in Way of the Exploding Fist.

The strengths of the combatants are represented by the time-honoured colour bars at the top of the screen, but the inclusion of little passport photos beside them is a nice touch. The bull is especially photogenic.

The graphics, particularly the backdrops, are very well done but the animation flickers, jerks and, in a word, is terrible. One of the best features of the karate games of years gone by was the wonderfully smooth animation as the player executed a well timed roundhouse kick or reverse punch.

To its credit, when one side or other scores a hit a small explosion caption is overlaid containing the word "pow" or "zap" or some other such Batmanesque phrase.

Sound is not very well supported. The tune gets very boring in record time and there are no interesting or novel effects in the game itself. It really is incredible the number of software houses that think they can get away with mediocre bang and splat noises or, as in this case, no effects at all.

This game just doesn't compel you to play it. With nothing else but gameplay going for it, the Human Killing Machine looks in dire need of an overhaul.

**Green**

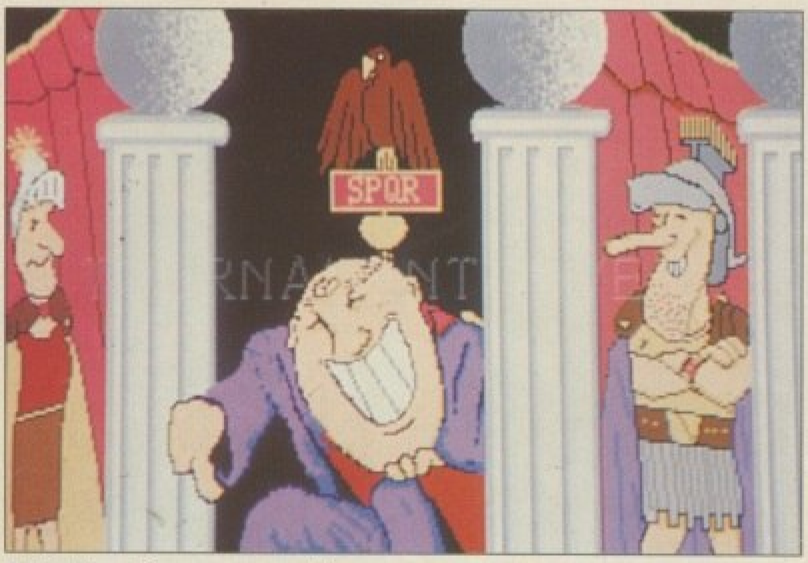
*HKM*
*£14.99*
*US Gold*

Sound
Graphics
Gameplay
Value

**Overall – 29%**

# I LUDICRUS

## Hacking away in the arena




*But Dateline said we were compatible . . .*



*Yeah, we think it's naff too*

CLEVER folk, these Actual Screenshots people. To live up to their name, they have only used graphics from the game on the box. And they are very fine graphics indeed.

Ancient Rome, some time only just AD. Ludicrus has a very important job – he cleans the lion doo-doo from the arena and the lion pens, thereby making the gladiators' path a little safer. I mean, one slip and you're really in it.

One Friday – or its Roman equivalent – Ludicrus is in the pub enjoying a few jars of Castermanus XXXX. It's been a hard week, what with that load of Christians a few days previously, so our Ludicrus gets faintly tiddly.

He then starts mouthing off at the local gladiators, claiming that anyone with half a brain and a blunt Stanley knife could do the same.

Via a long and complex story, Ludicrus gets dragged into the arena with nothing but a small shield and an even smaller sword. To regain his freedom he must fight the three current champions, plus several lions.

The first is the Gallic beauty Bon D'Age, whose speed and agility are legendary. The second, the Teutonic Herr Liss, is very fast and strong and utterly bald. The third, Bu Vyzr, is very big, incredibly strong and very stupid. The lion is of course very fast, very strong, yet so mind-blowingly brainless as to have been caught by the Romans.

You may have realised by now that we're talking combat game here. You have the standard 16 moves and opponents have their own fighting specialities. Bon D'Age carries a few fake attacks then does a quick low jab. Herr Liss charges fast, Bud Vyzr charges slowly, and yet both do enormous amounts of damage.

The lion takes great bounding leaps across the arena, although it will stand there and take a good hammering. Told you it was stupid. Once learnt, the technique for beating each becomes mechanical and is the same from game to game.

The graphics are the high point, reminiscent of French comic books. Ludicrus is small and weedy, the lion looks more like a soft toy than a ruthless killer and Caesar looks overweight and disreputable.

The background graphics are nice, with a motley selection of grubby Romans, tall, thin, short, fat, spotty – the works. The fighters are very well animated, with neat facial gestures and movements.

Unfortunately, there is very little sound apart from Oww, Eek, Roar, Blat, Crunch. The crowd doesn't move or make any noise, so the neat graphics alone fail to give a good atmosphere.

I Ludicrus would be good if it wasn't so repetitive, for to beat each fighter takes several rounds. If you fail, you have several rounds with a lion and then some more rounds with the person who beat you. Interesting, huh? It does have a two player option, but that won't save it for long.

**Stewart C. Russell**

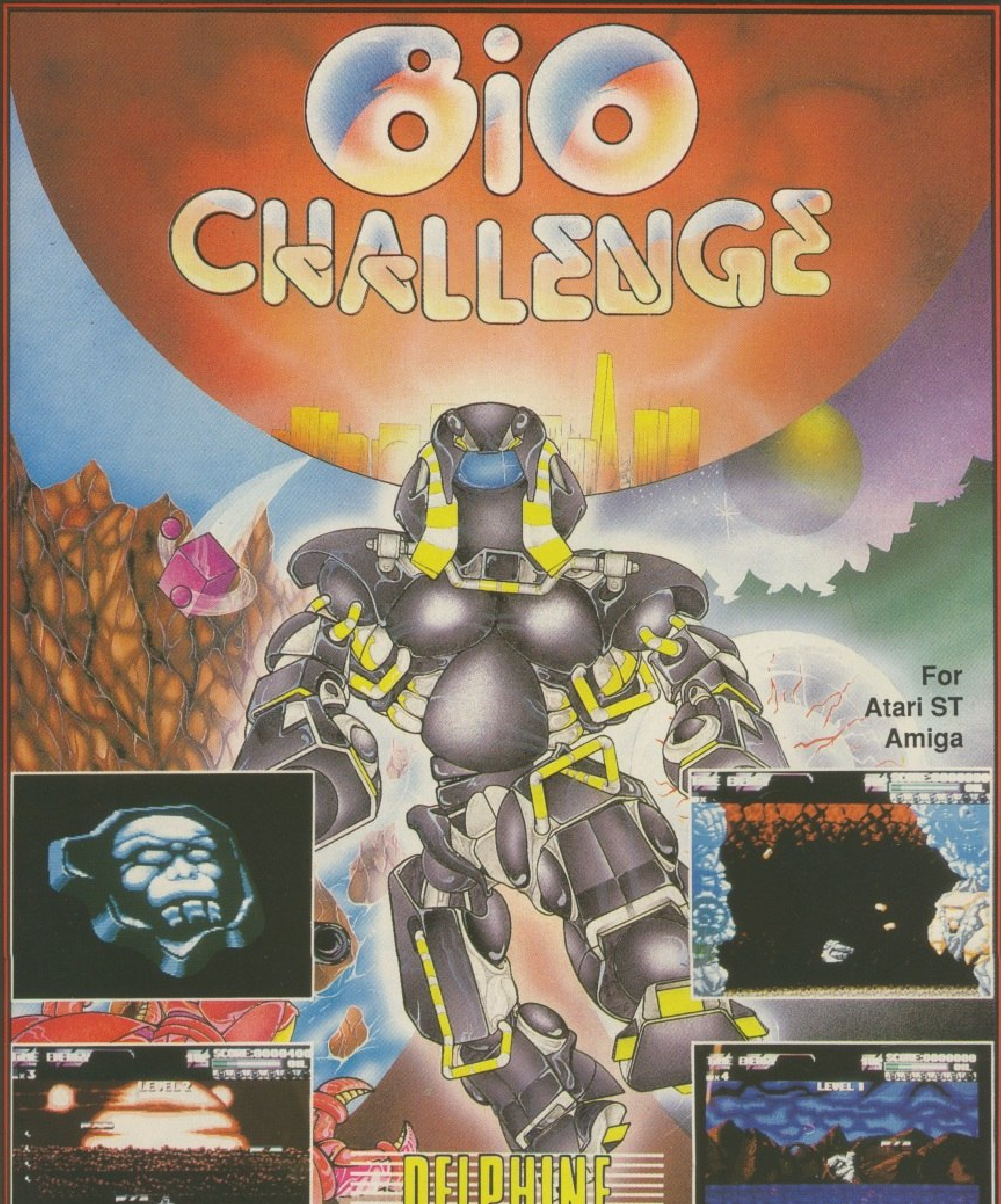
*I Ludicrus*
*£19.95*
*Actual Screenshots*

| | |
|---|---|
| Sound | 6/12 |
| Graphics | 11/12 |
| Gameplay | 6/12 |
| Value | 6/12 |

**Overall – 57%**



*Erm, let me tell you about my friend Androcles . . .*




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# GAUNT

### Garrison with



What's your poisin?



Wazzup? You look as if you have seen a ghost

WITH a mighty chop and a heaving hack, the rabid sequel was upon the hapless journalist. No, no, he cried, but to no avail – his fate was sealed, his doom set, the disc was in the drive, the monitor flickering alive.

You may be wondering what could inspire such fear in a hardened journo. It could, in fact, be only one thing – another Gauntlet variant. Hang on though, this is Gauntlet II, the official one from US Gold.

You might be tempted to ask how we can have a Gauntlet sequel when the original game was never released on the Amiga, and the answer those chappies and chapesses up in Birmingham would give is that this is the conversion of the coin-op Gauntlet II.

It isn't that the original was never programmed for US Gold – it was – it's just that the freelance programmer who offered to do the job found the task completely beyond him and the project was abandoned. Not that Amiga owners complained too vociferously. The other versions of Gauntlet were, without exception, dismal.

Gauntlet II throws four friends – if you have either the Microdeal interface or the US Gold one, otherwise it's two players only – into a dungeon in search of treasure, fame, points, the satisfaction of bragging that you made to the 100th level.

Each player can be an elf, warrior, valkyrie or wizard, in any combination. Thus you could have four wizards if you so chose, and that isn't too bad an idea.

Each has its own strengths and weaknesses, but the elf is virtually all weaknesses. The trouble is that after a few levels you find that the number of shots needed to kill the monsters increases from one to four, making the poor elf a certainty for a monster's dinner table.

Anyway, on into the dungeon and the short term objective of finding the exit to the next level. Before you get to it though, make sure you collect all available treasures, keys, useful potions and medallions.

The potions can have any effect from a smart bomb like detonation, to...

# TIGER

### New ground un

*Tiger Road*
*£19.99*
*Capcom*

Sound
Graphics
Gameplay
Value

Overall – 43%

THE world never tires of games with little men – or far more rarely women, which must mean something – hitting things with other things. The hitting things are usually implements to which there is a right and a wrong end.

The things which are hit are little men similar to your own, but invariably facing the other way. While there may be up to five of your men, there are a seemingly unending supply of chaps willing to lay down their lives for the cause of entertainment.

Tiger Road is pretty much bog standard fare. The party of the first part – that's you, kidda – is Lee Wong, a dab hand with an axe and a generally all right character.

Lee is annoyed that a certain samurai, Ryu Ken Oh, is causing havoc in the village by stealing all the children. At that time the Orient hadn't heard of YTS, so this was considered a bad thing. The children have been stolen to become soldiers for the despot's private army.




Not what you would call a barrel of fun

Raised from childhood on the values of Truth, Justice and Mom's Lychee Pie, Lee vows to avenge the foul deeds. Or at least get some of the kids back in roughly working order.

The quest is long and hard, the task is onerous and the copywriter unimaginative. So off he goes down Tiger Road, complete with rather nasty axe, for a quick afternoon's vengeance.

First on the scene are the Useless Samurai. These little folk just love rushing towards you and exploding on your axe. Next up are the Amazing Exploding Spear Throwers,

# UNTLET II

## son II with limitations



*I suppose a reference to the keyhole in Emmanuelle is out of the question*

Medallions don't allow you to bare your chest and pose – unless you're playing the warrior, of course – but add strange abilities like limited invulnerability, limited invisibility, limited bouncing shots and limited xxxxx. If this all sounds a bit limited to you, don't worry, you're in good company.

Lining up on the opposing team are lobbers who lob things at you then run when you get close, small fire breathing things which breathe fire and small invisible men who you don't see much of.

Then there's the lovely ghosts, muggers, Death, the thief, the It Monster and the acid pools.

Let me tell you about these acid pools. They're horribly green and slimey and chase after you. Upon contact they inflict an unpleasantly large amount of damage and emit the most disgusting squelchy noise. Ugh! They might have you shouting Acieed, but this is one house you'll want to get out of in a hurry.

Death is always a problem. Contact is accompanied by an horrendous noise as your health points start to disappear at a frightening rate. A smart bomb, sorry potion, will solve your problems.

The It Monster is a barrel of laughs when there's a few of you playing. When it touches someone it disappears and that character becomes It. All the monsters on that level converge on the luckless individual like he was Salman Rushdie in a mosque.

The only recourse for said individual is not to instantly apologise but to either touch someone else, thus nominating them as It, or get the hell off that level in a hurry.

The graphics are pretty good, but not as good as Garrison II because the playing area is smaller and the scrolling isn't as good. That said, the use of samples throughout is impressive. Though why they had to be from the coin-op and not freshly recorded I don't know.

If it comes to a straight choice between Garrison II and Gauntlet II then Garrison II wins. But if you have the interface and three friends who want to play too, then Gauntlet II is the choice for you.

**Duncan Evans**

*Gauntlet II*
*£24.95*
*US Gold*

| | |
|---|---|
| Sound | |
| Graphics | |
| Gameplay | |
| Value | |

**Overall – 75%**

# ERROAD

## nd innoriginality

who throw spears which, amazingly enough, explode. Various new weapons can be picked up, but I expect you expected that. Once past these, you're treated to some rather bad lightning while the new level loads in.

The next bit is the labyrinthine entrance hall to Ryu Ken Oh's castle, where giant night club bouncers hang about and do you no good at all. Disposing of them is more a matter of luck than judgement because the amount of battering they need to explode varies. This level results in much aggro.

Part three is a quick piece of homage to Donkey Kong. Barrels which roll towards you, can be jumped (difficult) or smashed (easy). At the end of the section is the chappie who is chucking the barrels; a quick flash of the axe and he's history.

Next comes the Hairy Savage bit – he's hairy, and boy is he savage. If you manage to see him off – not easy – the next bit is much the same as all that's gone before, except different.

Tiger Road breaks new ground in unoriginality. The scrolling play area is weeny, as are the sprites. It may play reasonably close to the arcade original, but is that an accolade?

What must be applauded is the sound, which is loud and suitably violent, especially the title tune. I've even loaded up the game just for the tune, not bothering with play it.

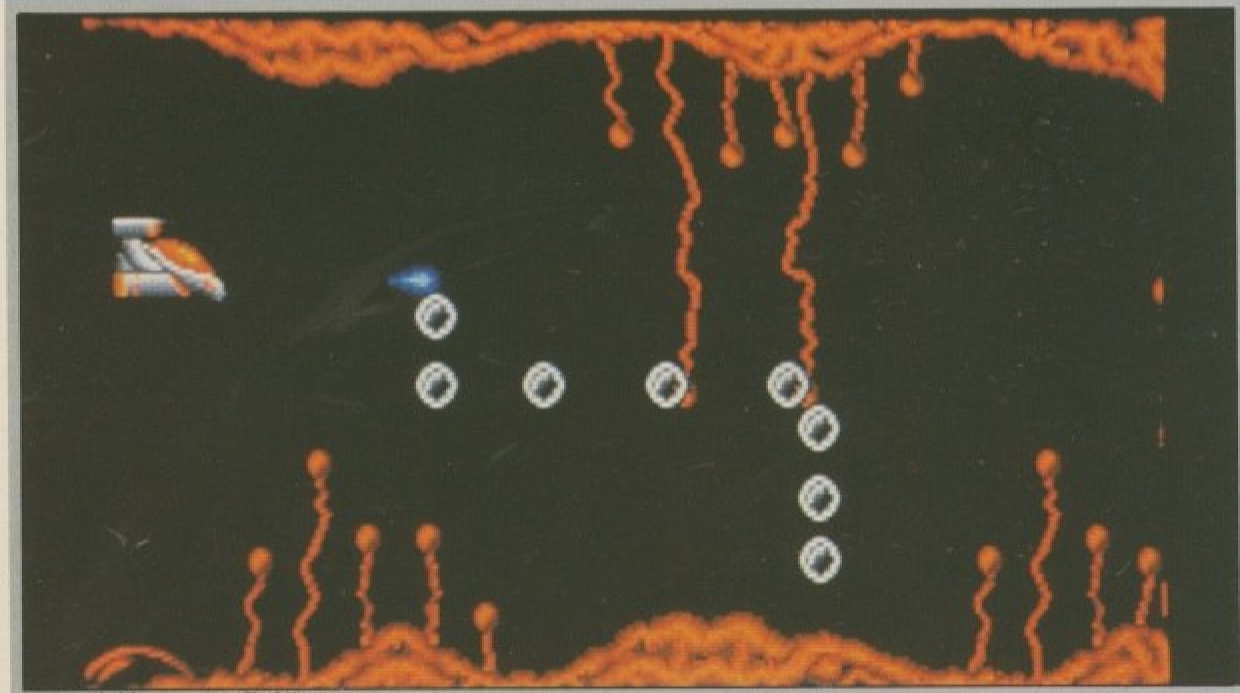
**Stewart C. Russell**



*You know Mum roll-on doesn't harm the ozone layer*

# DNA WARRIOR

## First disengage brain...



A remarkably poor rip-off of Zynaps

*DNA Warrior*
*£19.99*
*Artronic*

Sound

Graphics

Gameplay

Value

**Overall – 14%**

REMEMBER the days when you read that there'd be a new smash game out from your favourite author, saved enough for it and then rushed down the shops on the release date?

Remember reading all the inlay cards and instructions on the train home, then the impatient wait while the cassette loaded? Remember the howework lying forgotten while you lived this new creation? Wasn't it fun?

Well, DNA Warrior exactly recaptures those old time spirits. Sorry, did I say exactly recaptures those old time spirits? Um. What I really meant to say was exactly does *not* recapture those old time spirits.

What it recaptures is that other great home computer moment of truth, the realisation that you have a duff game.

All the stages in this scenario are the same but for the last one, where now the feeling is: "Surely there must be more to this turkey?"

Yes indeed, dear readers, DNA Warrior is not all there.

Some scientist, Szymanski by name, has discovered how to increase intelligence almost infinitely. Clearly this dude needs a bit of a hoik IQ-wise because he does the critical experiment on himself. Dumb, or what? Golden rule of brain surgery No 1: Do it to someone else first.

Fairly typically, something goes wrong. The learned Prof falls into a coma and it is miniature submarine time. The Prof, being old and generally past it, has all manner of bizarre prosthetic implants to keep him alive – your little submariner has a difficult task to contend with.

All the immune systems are not keen on you, so your task of replacing all the recalcitrant bits of DNA becomes a remarkably poor rip-off of Zynaps. If you shoot a wave of nasties they drop a useful little credit thing which can be saved up for handy large weapons.

Entry to other levels is via junctions in the tube walls. Sometimes these have to be opened by collecting a key somewhere else in the Prof's anatomy. Sometimes the level decides to end and you are left hanging about. The only cure for this is either killing yourself or waiting until the Annoying Interlude starts.

This piece of loathesomeness occurs randomly – the scrolling reverses and rocks get chucked at you until you get bored and leave via an exit. If you can bear it, the aim is to collect eight bits of DNA and kill off the malignant part of the brain.

Everything in DNA Warrior works. The scrolling works, the sound works, the tune grates and the gameplay annoys. Every noise has been carefully engineered to be tiresome.

There are two very useful keys in DNA Warrior – M switches the tune off, Off switches the game off. Urgh.

**Stewart C. Russell**



*Ho hum – shoot a wave of nasties, pick up a credit thing*



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# THE CAPED CRUSADER

## Batman up a ladder



*Who's been robin this game of characters?*

PROFESSOR Moriarty, the Penguin and the Joker are indestructible, yet Batman sets out to rid Gotham City of them. The Penguin has henchmen terrorising citizens and mechanical penguins everywhere. The Joker throws the local fairground into chaos and is holding Robin captive.

Unlike the previous versions of Batman, which took 3D games to new heights, The Caped Crusader is essentially a platform and ladders game, using the currently fashionable 2D with depth.

Put the disc in the drive, wait a few seconds, some music plays and you are invited to press f1 for the Joker or f2 for the Penguin – two entirely different scenarios for the price of one. The rest of the program loads, and you're off.

You can move Batman in 14 quickly-learned ways, all selected with joystick and Fire button. You can walk, climb, duck, high kick, low kick, punch and throw.

To use an object you must move over it and press the Fire button while pushing the joystick down. The utility screen appears and by moving the Batcursor over the appropriate icon you can carry, drop or use it.

This screen contains icons for switching sound on or off, abandoning the game and displaying score, energy and objects carried.

While you are scrambling around, various maniacs try to assault you, at which point the kicks and punches come in helpful, even against bombs and bullets. Your eventual aim appears to be either to enter the Penguin's mansion or to rescue Robin. The instructions, as usual, are unclear.

This new version of Batman is disappointing, especially for 16 bit machines from which great things must be expected. The display is too small, occupying about half the space it could have done. The graphics and sound are good, but could have been better, and the instructions reinforce the suspicion sparked off by the appearance of the graphics that I am reviewing a port from the ST.

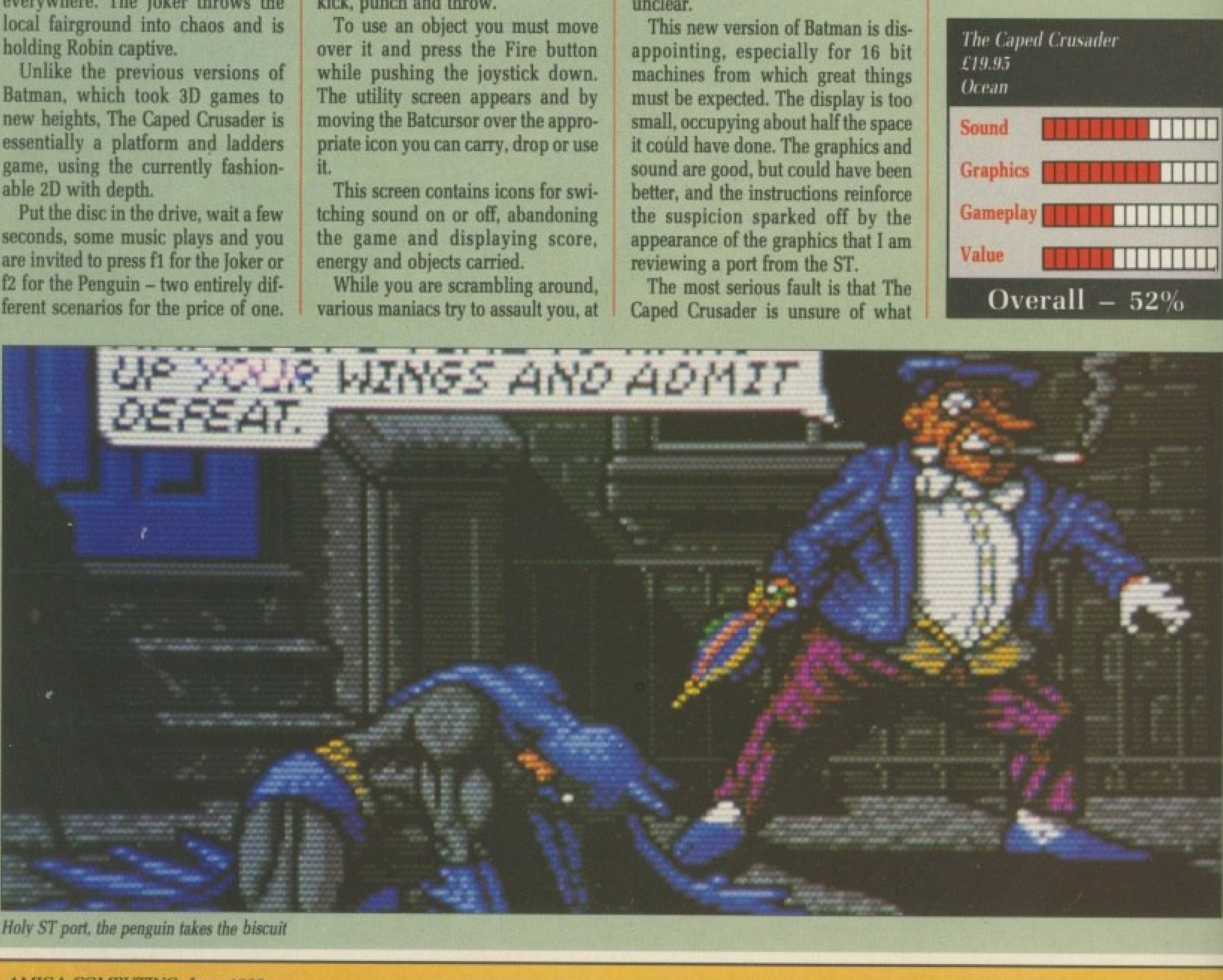
The most serious fault is that The Caped Crusader is unsure of what type of game it wants to be. It is a cross between an arcade adventure, a good old platforms and ladders and a beat-'em-up. It doesn't really work.

**Alastair Scott**

*The Caped Crusader*
*£19.95*
*Ocean*

| | |
|---|---|
| Sound | ▮▮▮▮▮▮▮▮▮▮▮▯▯▯▯▯▯ |
| Graphics | ▮▮▮▮▮▮▮▮▮▮▮▮▯▯▯▯▯ |
| Gameplay | ▮▮▮▮▮▮▮▯▯▯▯▯▯▯▯▯▯ |
| Value | ▮▮▮▮▮▮▮▯▯▯▯▯▯▯▯▯▯ |

**Overall – 52%**




*Holy ST port, the penguin takes the biscuit*

# clik

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# SCORPION

## Zany Gryzor with style




*The standard weapon isn't great shakes against the guardian giant at the end of each level*

*Scorpion*
*£24.95*
*Digital Magic Software*

Sound
Graphics
Gameplay
Value

**Overall – 93%**

TIME is funny stuff. We don't know what it is or where it's going, but it affects us all. In the Magical Lands, Time hardly has a look in. Mighty strange things can happen. Past mixes with Future, all under the guise of The Present. Weird.

The Scorpion folk have as little as possible to do with the Magical Lands, possibly because they're a little odd but mostly because the natives aren't friendly.

So when the Princess of Scorpia is kidnapped off to the Fifth Domain of the Magical Lands, the Scorpions get worried and in true democratic style, you – a Scorpion warrior – are volunteered to be the hero.

Standard issue Scorpion weaponry are magic hands that can belt out fairly feeble death rays at a rate of knots. Along the way extra skills and weapons can be picked up – the standard weapon isn't great shakes against the guardian giant at the end of each level.

The opening screen doesn't promise much – a very small though neat little display, accompanied by a very short snatch of Holst's Mars. Things are not going too well in the boding department. This is rapidly cured by the start of level one, which is set in a rather odd harbour.

Speedboats mix with pirate ships and barges. Every last denizen is out to harm you – seagulls, pirates, crabs, kamikaze piranhas, the lot.

Bits of the scenery decide that they're not going to be left out of this whole hurting scene, and fall on you. Large cannon take more than just a passing interest and parrots drop slightly suspect bombs on you. Does one get the idea by now that there is a faint hint of zaniness in Scorpion?

Out of the harbour, it's into the town, where everything is thrown at you. If you've been clever you'll have picked up some additional jumping ability and some serious bidirectional firepower. Advanced overkill, or what? Frogs, dogs, skulls, snails (ra-ta-tat-ta-tat) and more, all of which can be vapourised with a quick finger point.

Getting killed produces a faintly tacky but well executed zoom routine that may cause the delicate of stomach to make an urgent call down the Great White Telephone.

The action progresses in level two to the forest – complete with rock-chucking trolls – then on to the ice lands. Digital Magic should keep this third stage well away from the BBC, the Daleks are a little *too* lifelike.

Everything about Scorpion screams quality and style, except for the box illustration which is a little iffy. The game is a zany Gryzor cum Green Beret hybrid with deliciously large, fast characters and plenty of big noises.

DMS may be a new software house, but this is a very polished product. There's certainly no draw for the gentle type, but if the brain can be swung into neutral, it's highly therapeutic.

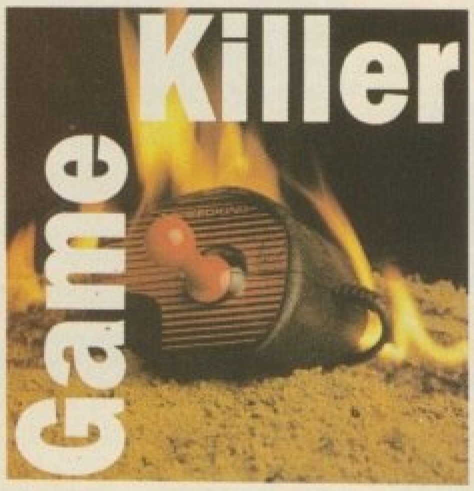
One thing, it isn't is easy, so there's definite long term interest here. The only slight problem is that you always restart at level one, not at the highest you reached. A mere bagatelle to the dedicated connoisseur.

Scorpion has made a jaded reviewer very happy, and will be doing so for quite some time to come.

**Stewart C. Russell**



*Magic hands can deal out death rays at a rate of knots*




# Premier program pokes

*Max "The Hacks" Tennant explains how to get your cheats working with some help from Justin Gavinovic*

HELLO helpful hackers, before we start, an apology. There are a couple of problems with the Elite poke in our March issue, so it's confession time.

The line:

```
a=VAL("&h"+a$) tot=tot+a
```

should have read

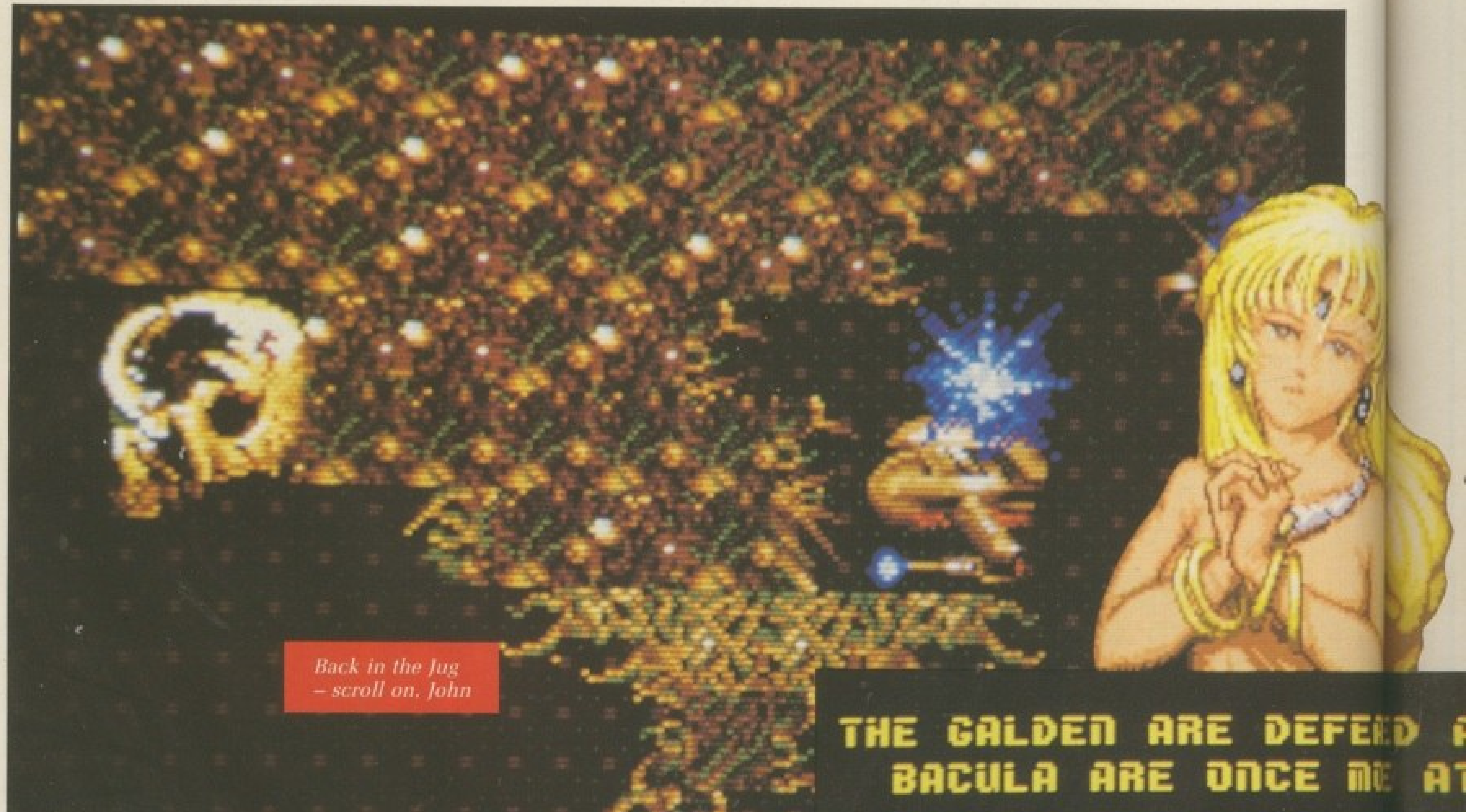
```
a=VAL("&h"+a$):tot=tot+a
```

It's just a colon to you and me but to the Amiga it's a syntax error. Even with this fixed you will have some problems if you have less than a meg. New pokes will be along as soon as possible.

Consciences cleared, now on with the pokes. To type them in have a formatted disc handy. Load Basic from the Extras disc which came with the machine. You should be using backups of both the Amiga discs – but then there are lots of good habits some of us never manage to get into.

When you have Basic loaded type the listing into the right-hand window and check it carefully. Save the listing on the disc you had ready and put the game disc into the computer. Run the Basic program (use Start from the Run menu). The poke automatically runs the game. This will sometimes give an error. Don't worry, just click on Cancel and the game will load.

Game Killer is not the place to study the workings of Basic, if you haven't used Basic before, a game




Back in the Jug – scroll on, John

poke is not the best introduction. Spend the next rainy Sunday with the Basic manual, your Amiga and a packet of chocolate digestive biscuits. Work through the manual and discover how much fun programming can be.

The first poke gives infinite lives for Microdeal's Jug. This will produce an error when the disc is inserted. Worry not.

```
REM INFINITE LIVES FOR
REM 'JUG'
REM COPYRIGHT 1989. BY JUSTIN G.
REM FOR AMIGA COMPUTING.

tot=0
FOR n=327680& TO 327808& STEP 2
READ A$
A=VAL("&h"+A$)
tot=tot+A
POKEW n,A:POKEW (n+130),0
NEXT n
IF tot=661541& THEN GOTO section2
PRINT "THERE IS AN ERROR IN THE DATA."
END
section2:
cheat=327680&
CALL cheat

DATA 6100,0038,337C,0002,001C,42A9
DATA 002C,237C,0000,0400,0024,4BF9
DATA 0006,0000,234D,0028,4EAE,FE38
DATA 41FA,000A,2B48,00C6,4EED,000C
DATA 31FC,6004,0A52,4EF8,0100,2C79
DATA 0000,0004,93C9,4EAE,FEDA,45FA
DATA 009C,2480,43FA,0086,4EAE,FE9E
DATA 43FA,002E,4280,4281,41FA,0014
DATA 4EAE,FE44,43FA,001E,45FA,006A
DATA 234A,000E,4E75,7472,6163,6B64
DATA 6973,6B2E,6465,7669,6365
```

NEXT up, infinite lives for Gremlin Graphic's Deflektor, a brill game if ever there was one. No shooting, just simple optics. I'm sure Mr Debanham, my old physics master, would approve. When the disc is inserted you will get a disc error; as usual this should be ignored.

```
REM INFINITE LIVES FOR
REM 'DEFELKTOR'
REM COPYRIGHT 1989. BY JUSTIN G.
REM FOR AMIGA COMPUTING.

tot=0
FOR n=512000& TO 512150& STEP 2
READ A$
A=VAL("&h"+A$)
tot=tot+A
POKEW n,A:POKEW (n+152),0
NEXT n
IF tot=766862& THEN GOTO section2
PRINT "THERE IS AN ERROR IN THE DATA."
END
section2:
cheat=512000&
CALL cheat

DATA 6150,4BF9,0005,0000,337C,0002
DATA 001C,42A9,002C,237C,0000,0400
DATA 0024,234D,0028,4EAE,FE38,41FA
DATA 000A,2B48,0086,4EED,000C,41F9
DATA 0002,0000,43F8,0400,4CFA,00FF
DATA 000C,48D1,00FF,2149,008A,4ED0
DATA 31FC,6006,0C78,4EF8,0800,2C78
DATA 0004,93C9,4EAE,FEDA,45FA,009C
DATA 2480,43FA,0086,4EAE,FE9E,43FA
DATA 002E,4280,4281,41FA,0014,4EAE
DATA FE44,43FA,001E,45FA,006A,234A
DATA 000E,4E75,7472,6163,6B64,6973
DATA 6B2E,6465,7669,6365
```

Last but not clichéd infinite lives for Last Duel from US Gold, and worra surprise – an error will be reported when the disc is inserted.

```
REM INFINITE LIVES FOR
REM 'LAST DUEL'
REM COPYRIGHT 1989. BY JUSTIN G.
REM FOR AMIGA COMPUTING.

tot=0
FOR n=327680& TO 327814& STEP 2
READ A$
A=VAL("&h"+A$)
tot=tot+A
POKEW n,A:POKEW (n+136),0
NEXT n
IF tot=722567& THEN GOTO section2
PRINT "THERE IS AN ERROR IN THE DATA."
END
section2:
cheat=327680&
CALL cheat

DATA 6100,003E,337C,0002,001C,42A9
DATA 002C,237C,0000,0400,0024,4BF9
DATA 0006,0000,234D,0028,4EAE,FE38
DATA 41FA,000A,2B48,0142,4EED,000C
DATA 303C,6002,31C0,4756,31C0,4802
DATA 4EF8,081C,2C79,0000,0004,93C9
DATA 4EAE,FEDA,45FA,009C,2480,43FA
DATA 0086,4EAE,FE9E,43FA,002E,4280
DATA 4281,41FA,0014,4EAE,FE44,43FA
DATA 001E,45FA,006A,234A,000E,4E75
DATA 7472,6163,6B64,6973,6B2E,6465
DATA 7669,6365
```

TTFN. More next month, keep your hints coming in, but please check them first. It is not unknown for unscrupulous gentlemen to send Atari hints which don't work on the Amiga. You know who you are.

*One poke and you can be a big hero*




*Infinite lives should get you through the toughest Deflektor screen*

# Let's play it safe

*Rupert Goodwins passes on some tips for using parameters instead of registers to get data into subroutines*

QUARANTINE. Great. The latest batch of small, furry mammals due to be paraded for your further assembler language edification has been impounded at Heathrow pending six months of quarantine. The best the Amiga Article Oddments man from the office down the corridor could come up with is his personal collection of obscure musical instruments, all guaranteed genuine.

The super subjects of stacks and subroutines was covered last month. Most subroutines need data from the program that is calling them, be they a series of notes to play, characters to print or green creeping things to animate across the screen.

Until now it's been assumed that the data is passed in one or more of the 68K's copious collection of internal registers. At worst, the registers point to an area of memory that's used for data storage.

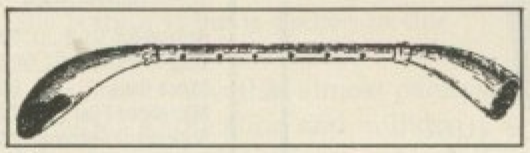
But alas, that's not how most programs work. For a start the chances are that you want to use some of those valuable registers to keep important information in and they're not available for parameter passing. A parameter is what real programmers call data passed to a subroutine. If they just called it data, everyone would know what they were talking about.

ANOTHER problem is that it's quite possible that you want to shove more parameters at a subroutine than the 68K has registers. This happens a lot in the Amiga, where the number of different things you have to tell the computer about the window you want to open gets into double figures.

So you stick all the data in memory and tell the subroutine where the memory is, right?

Almost. If you choose just any bit of ram it would be a full time job to make sure that each subroutine has its own area. And if a subroutine gets called re-entrantly, the old information will be lost as the new data gets shovelled in.

What happens if the data is of different lengths? You'd have no time left to practice your pibcorn technique – Welsh pipe made from a sheep's thigh bone – if you had to debug that lot. Still, allocating chunks



*Pibcorn*

of memory to each subroutine is a quick and easy method if you're quite sure that it's safe.

A good way to implement this is to stick all the parameters immediately after the bsr or jsr instruction although this leads to the complication that when the subroutine finishes the return address on the stack points to the parameters.

Unless you are peculiarly skilled in writing data that also happens to be valid 68k code, this will result in interesting yet fatal side effects as the processor comes across Whittle and Dub – a simple recorder with three holes and accompanying small drum



*Whittle and Dub*

– and tries to run it. So the subroutine has to massage the return address, like so:

```
jsr    blow_instrument
dc.b   "Whittle and Dub",10
;
; program will have to
; carry on from here.

blow_instrument:
movem.l D0/A0-A3, -(A7) *** <- (A)
movea.l 20(A7),A1       *** <- (B)

;
; here have code to Do Things to
; the data pointed to by A1.
;

add.l   #16,A1          *** <- (C)
movea.l A1,20(A7)       *** <- (D)
movem.l (A7)+,D0/A0-A3  *** <- (E)
rts
```

The instruction at (A) saves five registers – D0, A0, A1, A2 and A3 – on the stack, since we assume that whatever actually blows the instrument will massacre these registers. At (B) we have five registers at four bytes apiece, adding 20 bytes to the size of the stack, so the address of the parameter is 20 bytes away from the current stack pointer. We move the parameter's address into A1, where it will be used.

THE parameter at (C) is 16 bytes long, so we add that to A1. This now points to the address after the string, which is where we want to resume running the original program. (D) is where we stick the new return address back into the stack.

Finally, at (E) we restore all the old registers before returning.

This might appear clumsy, but it's not too difficult to get right and it's easy to work out what is happening. It is inflexible though, especially if you are not sure what you're going to be passing to the subroutine. The most popular way of passing parameters is to use the stack as temporary storage.

In fact it's so popular – unlike the ocarina, an egg-shaped instrument ►

◄

with a number of finger holes – that Motorola designed a special pair of instructions to ease its use. Called link and unlk, they exist for the sole purpose of providing space on the stack without too much mental mangling.

Link needs two things, a register – usually an address register, called the frame pointer – and a negative number. First it pushes the register on to the stack, saving it for later. Then it copies the stack pointer into this register, effectively remembering where the stack is.

It needs to do this because it immediately adds the number to the stack pointer. The number needs to be negative because the 68K stack pointer gets smaller as it's used – the stack grows down towards the *beginning* of memory.

SO after all this the stack pointer is a certain distance away from the frame pointer, which is marking where the stack pointer used to be. But, as Prince Rheinhart said after the world's first and last ocarina concert, why?

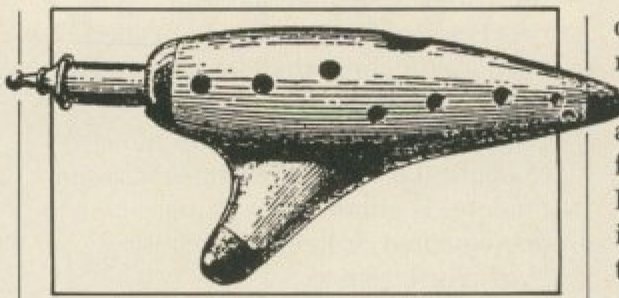
The space between the stack pointer and the frame pointer – called, with more bold imagination, the stack frame – can now be used for whatever the programmer desires.

It's completely safe from being overwritten by subsequent stack operations, can be used by the subroutine itself to store and return data for the calling program, and can be released for re-use by the stack with the unlk instruction. This loads the stack pointer with the frame pointer and pops the original frame pointer's contents from the old stack.

So, to pass three long words of data in D0, D1 and D2 to a subroutine...

```
link   A0,#-12       ; Has to be -ve.
move.l D0,-4(A0)     ; Stick D0 in,
move.l D1,-8(A0)     ; and D1,
move.l D2,-12(A0)    ; likewise D2.
bsr    play_ocarina
move.l -8(A0),D1     ; Get the result.
unlk
```

In this case it might have been easier just to have passed the values in the registers, but it's quite possible that *play–ocarina* will need to use the registers itself to set things up before



*Ocarina*

it's ready to look at the data. It also returns a value in the same stack frame, which the calling code retrieves and salts away in a register before continuing.

If you do end up writing machine code that has to link to someone else's C program, you'll find that passing parameters on the stack is the only way to communicate – a powerful and flexible method that can introduce some subtle errors when the wrong value is placed in the wrong place on the stack.

In fact a virus that almost paralysed America's education and military computer network last year worked because it was designed to overwrite the stack frame that the inter-computer mail program provided for certain message data. After the data came the return address.

By writing too much data the rogue program was able to insert its own return address. The host computer unwittingly followed this false return address to instructions that duplicated the virus and sent it on to more computers.

LIKE viruses, and not entirely unrelated to them, there is another aspect of machine code programming that is usually glossed over, a subject that is considered almost bad taste by the cognoscenti as they discuss t-states and DMA timings over cups of Earl Grey to the strains of the Axolotl Nail Fiddle Quartet. That subject is debugging.

It seems, according to rumour, that many people's machine code efforts somehow fail to fire first time. In these enlightened days there is no need to be ashamed of writing buggy code. It's no longer a crime, and many a haggard hacker will relate with perverse pride tales of the early morning bug-fix.

Don't let it happen to you. With simple precautions many mistakes can be caught before they happen and many more blatted in their infancy.

The far-sighted programmer buys an assembler with good trace facilities. Amiga Devpac is one such. It lets you trace your program instruction by instruction, examining the register contents, the state of the stack and what's in memory at each operation. Many bugs are content to give up almost without a struggle when faced with such sophistication.

AS you enter a loop which should display 10 South African marimbas or zapotecanos, you notice that the register which should hold the number 10 has instead got the result from the last keyboard check you did.

If you're depending on a public domain program without any support, or the problem is happening somewhere but you're not sure where, a good technique to adopt is the debug trace.

This needs a routine which will send a character to the screen, printer or the serial port, according to the program under test. This routine should not change any registers or use any memory apart from the stack. You should be able to throw in a:

```
move.w  D0,-(A7)
move.b  "!",D0
bsr     debug_routine ; display the
                      ; char in D0.
move.w  (A7)+,D0
```

at any point without disrupting the code around it. If your assembler can cope with macros – a way of defining a single word to stand for a whole section of code, such as that above – then it's a good idea to have a debug macro, like:

```
debug "!"
```

By placing a call to debug at the beginning and end of subroutines, especially with matching symmetrical outputs, the rogue routine can be found by a process of elimination. For example, having *debug "<"* at the beginning and *debug ">"* at the end of a subroutine to receive a byte from the serial port, it will let you see whether the machine is going into limbo during the reception, when a lonely "<" will be displayed or

►

◄

afterwards, when "<>" will be shown.

If the bugged code is destroying the screen, use a variant of the debug routine that writes to the printer or to the serial port, where your ZX Spectrum is doing sterling duty as a debugging terminal.

As useful, but in different circumstances, is a routine that displays the contents of a register. It doesn't matter which, you can always copy the register you're really interested in into it before calling the routine, and it can provide a useful window on the internal workings of a subroutine.

Many bugs are a result of the program not setting up a value properly or a subroutine messing up a register that should be saved.

For example, many programs have a routine to wait for so many seconds before continuing. If your program does, and it seems to stop working every so often, displaying the "time to wait" parameter as the wait routine is entered might show that you're telling it to hang about for 25,000 seconds because you've used the same register to clear out some memory immediately beforehand.

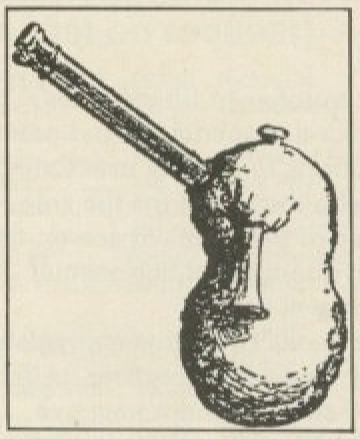
Other common classes of machine code bug include the loop that never ends – like the ocarina concert – because the register that you're using to count the number of times through the loop is either never being decremented or being constantly reset. For instance:

```
start_loop:
move.w #10,D0
bsr    clarion_call
subq.w #1,D0
bne    start_loop
```

will run and run and run, whereas the very similar but muche correct:

```
move.w #10,D0
start_loop:
bsr    clarion_call
subq.w #1,D0
bne    start_loop
```

will behave itself. While those examples might seem plain daft – and there is no universal law of nature which prevents people from writing daft code – when the loop is much longer and more involved, getting the label at the beginning out by one



*Utricu...Utricula...Bagpipe*

instruction is as easy as falling off an utricularium – a Roman bagpipe.

In that case putting a routine to print out the value of D0 just before the bne branch would reveal the problem in a trice.

And no, a trice isn't a musical instrument. If you don't own a trice, never be surprised if you can't work out why your code is disappearing. After all, many a program has vanished without a trice.

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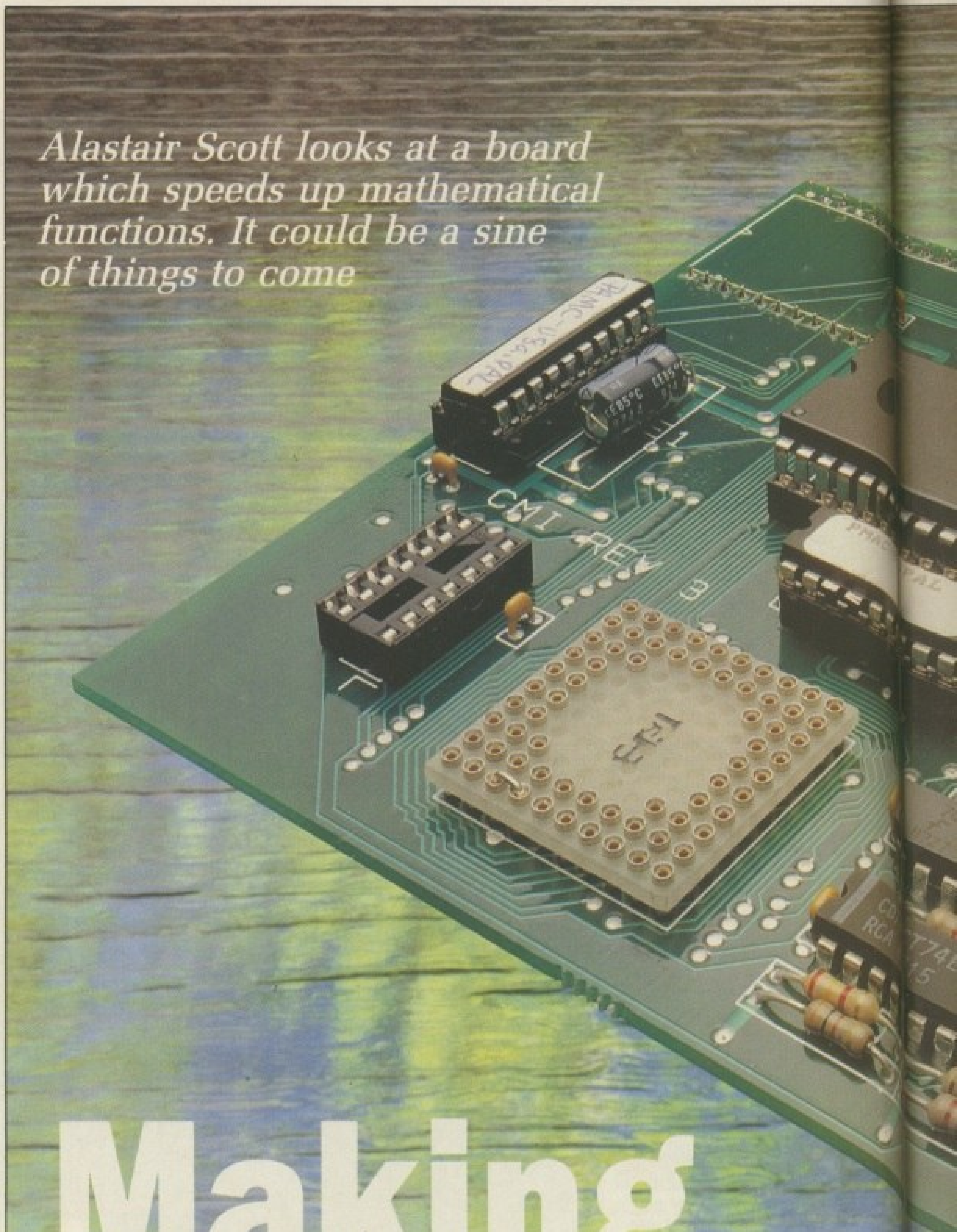
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# Making waves

*Alastair Scott looks at a board which speeds up mathematical functions. It could be a sine of things to come*

CONVENIENTLY forgetting the Amiga's superior sound, graphics, custom chips and so on, ST owners often claim with glee that their machine is slightly faster than the Amiga. This is true, the ST's internal clock runs at 8MHz compared with the Amiga's 7.16MHz. Installing the CMI Processor Accelerator (PA) pacifies the critics and lifts the Amiga into a different league.

It replaces the 8MHz 68000 central processor, the Amiga's nerve centre, with a 16MHz 68000, which actually runs at 14.32MHz. The result is a considerable speeding up of everything the Amiga does.

The first task is to install the CMI board. You have to take out a few screws, lift the Amiga's lid, remove a metal shield, find the old 68000 chip, lever it out, put it in a safe, static-free place, fit the board by pushing its pins into the vacant 68000 socket and reassemble the case. Five minutes' work, no problem, even for technological illiterates.

Alas, life is not quite that simple. As far as the Amiga is concerned, nothing has happened. Each time you reset it you must tell it that the CMI board is there using the programs supplied on the accompanying disc. Let's have a look at each one in turn.

CLICKING on the PA icon runs a program which puts the Amiga into 14MHz mode. There is a version which can be copied into the C directory of your boot-up disc and automatically run by typing PA into the Startup-Sequence file in the S directory.

There are several other simplified versions for use on discs with very little free space. Various parameters can be inserted after the PA command from CLI or from pulldown menus in Workbench which duplicate the effect of other icons.

Use any program and you'll immediately see the effect. They run considerably faster, the most noticeable difference I found being with the previously snail-like Notepad. Mice and windows move very smoothly around, cursors fly across the screen, the Intuition system becomes even more of a pleasure to use and you begin to laugh at how slow the ST operating system is.

The 7MHz, 14MHz icon resets the clock speed. Occasionally programs will object to the faster mode and will require the slower clock speed to be selected before they will work properly. Ctrl–Amiga–Amiga also resets the clock speed.

The board provides space for a 68881 maths co-processor and a




12MHz crystal oscillator, both of which can be bought separately from an electronics supplier and pushed into the empty sockets before installing the board. Three programs – InstallMC, InstallSBMC and RemoveMC – are provided. Although the 68881 runs at a mere 12.5MHz, it speeds up mathematical calculations by as much as 40 times.

In order to use the 68881 chip you are provided with two maths libraries – already being shipped with Workbench 1.3 – and they should be copied to your boot-up disc. Running the appropriate Install program will then tell the Amiga that the 68881 is there and any program which uses the maths libraries will use the 68881 automatically.

Alternatively the 68881 can be selected from the pulldown menus after clicking the PA icon or by using the PAMS command from CLI or in your startup-sequence. Again, resetting the computer turns off the 68881.

A program called FPUInstall (for Floating Point Unit) must be run, and the FPU library copied to your boot-up disc, before your Amiga will be able to handle, without crashing, multitasking programs which access the 68881.

| Computer | Program | Time |
|---|---|---|
| ZX Spectrum | Brotty | 38 mins |
| Amstrad CPC | Amsig | 10 mins |
| Amiga (no 68881) | MandFXP | 49 secs |
| Amiga (with 68881) | MandFXP | 7 secs |

*Mandelbrot timings*

DEMONSTRATIONS are supplied. The first, SinePlot, shows off the 68881, if fitted, by drawing simple sine and cosine curves simultaneously. Boring? No, astonishing! Without the 68881 the program takes 54 seconds to run, with the 68881 it's two seconds. The second demo draws strange patterns involving polygons and is about twice as fast as before.

There is also a version of the quickest and best shareware program for plotting the Mandlebrot set which uses the new maths libraries. I can't get enough of such programs, there are literally scores in the public domain, but MandFXP does show off the 68881 to glorious effect. The figure above shows the shortest times taken by various programs to draw the entire Mandlebrot set on their respective computers.

MandFXP has full scaling, magnification and colour manipulation options and can also, given two parameters, draw Julia sets. A superb program. Send some money

▶

to the Canadian authors and you'll get the latest version with even more facilities.

Instruction files on the disc give more technical information than that available from the small but excellent manual, which gives you enough information to get started and plenty of help to the beginner.

ENTHUSIASTS will be pleased to see the two hardware links on the board which allow 14MHz mode to be selected at power up or provide a fast rom mode, which slightly decreases rom access when the computer is running at 14MHz, thus speeding it even more. But the CMI Processor Accelerator is very expensive. It is only at its best when accessed from machine code or C.

If you want to speed up a slow AmigaBasic program, you'll be disappointed. There will be a slight increase in graphics speed but even the AmigaBasic supplied with Workbench 1.3 doesn't use the new libraries – maths-heavy programs *won't* run faster.

On the plus side, the board is simple to install, the software is easy to use and crashproof, desisting from doing silly things like trying to initialise the new 68000 when it isn't fitted. The documentation is good and I haven't found a program which the board prevents from working.

THE main problem is, what use is it? No doubt scientists and mathematicians will be grateful for the co-processor when they are trying to solve 'orribly complicated equations, but most mortals will find their vanilla Amiga fast enough.

Still, it was a pity I had to send it back.

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*SOFTWARE*...........
*Easy to use and crashproof. Doesn't do silly things like initialising the new 68000 when it isn't fitted.*

*SPEED*....................
*Really only at its best when accessed from machine code or C. You'll be disappointed if you want to speed up a slow AmigaBasic program.*

*VALUE*...................
*Very expensive, especially with the maths co-processor.*

*OVERALL* *65%*

*Most mortals will find their vanilla Amiga fast enough.*

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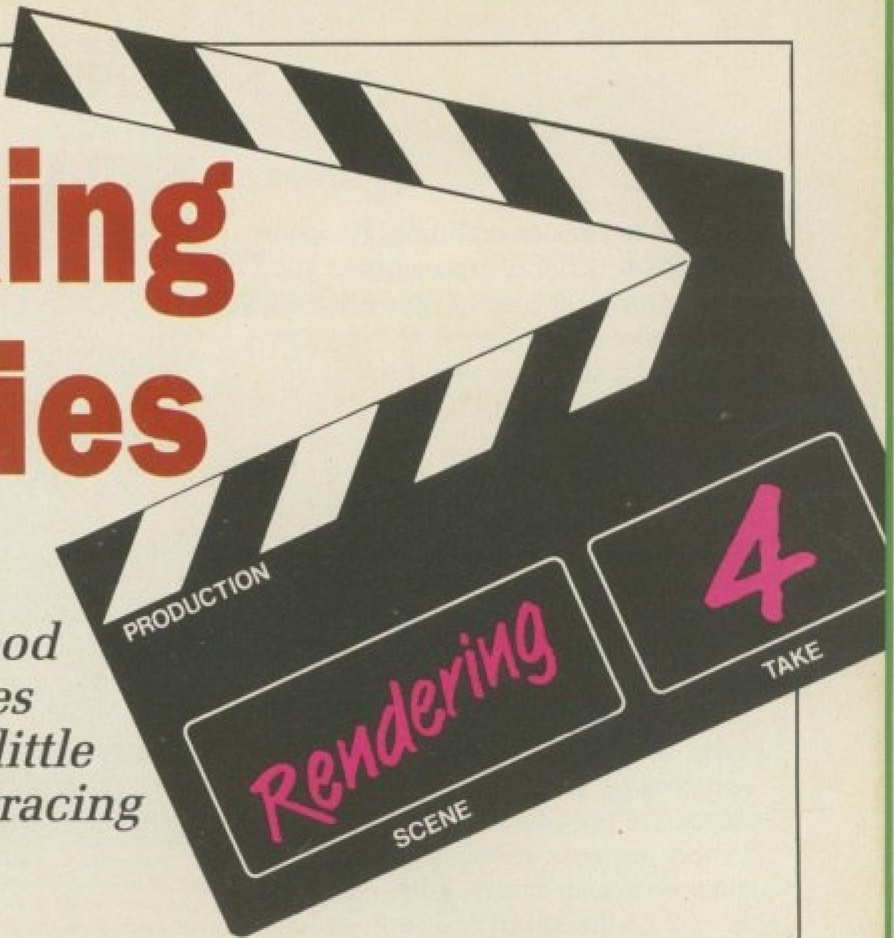
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# Making movies

*Sam Littlewood ends his series by casting a little light on ray-tracing*




RENDERING methods and their performances are the most discussed subjects of animation. Phrases like ray-tracing, painter's algorithm and z-buffering are bandied around and much is made of the ins and outs of the various techniques.

In truth, the turning of abstract data into hard pictures is the most automated and uncreative part of the whole process. The raw data the renderer will use to generate the final sequence is where creativity can be applied.

Even though rendering is less creative, it still tends to occupy a large amount of the time involved in building a sequence. Different packages will produce varying styles of picture, and take radically different times to finish the job.

The current buzzword for rendering packages is ray-tracing. The Amiga is just fast enough to make this technique viable for those with an ample supply of patience and a trouble free electricity supply. Packages that employ ray-tracing are Sculpt-3D and Turbo-Silver.

The system is particularly good at modelling the effect of lighting, including the properties of semi-transparent and reflective objects. This accounts for the plethora of glass and silver ball pictures in existence.

There are cases where most ray-tracers will fall down. For instance, in real life a sphere does not cast a uniform shadow, it will be some refraction of the light source, possibly focused to a point. Using a ray-tracer the sphere will cast a uniform shadow.

CREATIVE use of shadows is an effective technique if a ray-tracing renderer is available. An example is the Kahnankas or Newton's Cradle movie. The lampshade puts everything but the subject in shadow.

Sculpt-3D has a relatively simplistic ray-tracer and can quite easily account for a day of processing for one image. Turbo-Silver uses better techniques to reduce the rendering time of the same scene into something around an hour.

The other side of this is that Sculpt-3D has been available for some time and has a good user interface. Turbo-Silver is more recent and far less work has been put into modelling and animation, the areas that you have to use to design the data for the final picture.

To make an analogy with cars, Sculpt-3D is a somewhat underpowered luxury vehicle whereas Turbo-Silver is a shopping trolley fitted with a racing V8.


*Turbo Silver only has one light source but produces quick results*

BEFORE ray-tracing was researched and became practical, people were quite happily producing images and animations with other rendering techniques. A scene to be rendered will be built out of a set of geometric primitives, whether it is to be ray-traced or otherwise.

Ray-tracing involves chasing the path of every ray of light from the eye through a pixel and finding where it hits, where it bounces off and where it is split or bent.

A simpler method is to take each primitive, for example polygons, work out the area each occupies in the final picture and fill those areas with each object's colour. The process has to take into account the relative distance of objects from the eye.

This technique can be used to ►

◄

generate images in real-time. However the realism is not overpowering. Objects turn out a constant colour, irrespective of lighting, and there are none of the shadows or reflections that would be present in a real life scene.

TECHNIQUES can be applied to this style of rendering to add some of these effects, but they reduce the speed and increase the complexity. Videoscape-3D and Forms-in-Flight are good examples of rendering by this method where the images are produced in seconds.

There are new versions of both packages which increase the realism but reduce the speed. Adding realism is hard work.

Which technique is better? It depends on what you want. The example movie talked about in earlier articles has only been rendered using the simplistic painter's algorithm or polygon splating. The prospect of rendering 50 frames using the ray-tracer is less than appealing.

There are other considerations. The objects in the movie were never designed to look like real life, and features such as reflection or refraction are not part of the storyline. Even using this method, each frame of the movie takes around 15 minutes to render on a standard Amiga. In total, the movie takes well over two hours to produce.

THE movie was produced using Sculpt-3D, because it has a sensible user interface. It would have been nice to have the speed of rendering given by Turbo-Silver, but the design would have been far harder.

Animation can cover a whole host of rendering sins. Ultra-realistic rendering is only worth it if that is the point of the picture.

Or if there is a spare Cray knocking around.

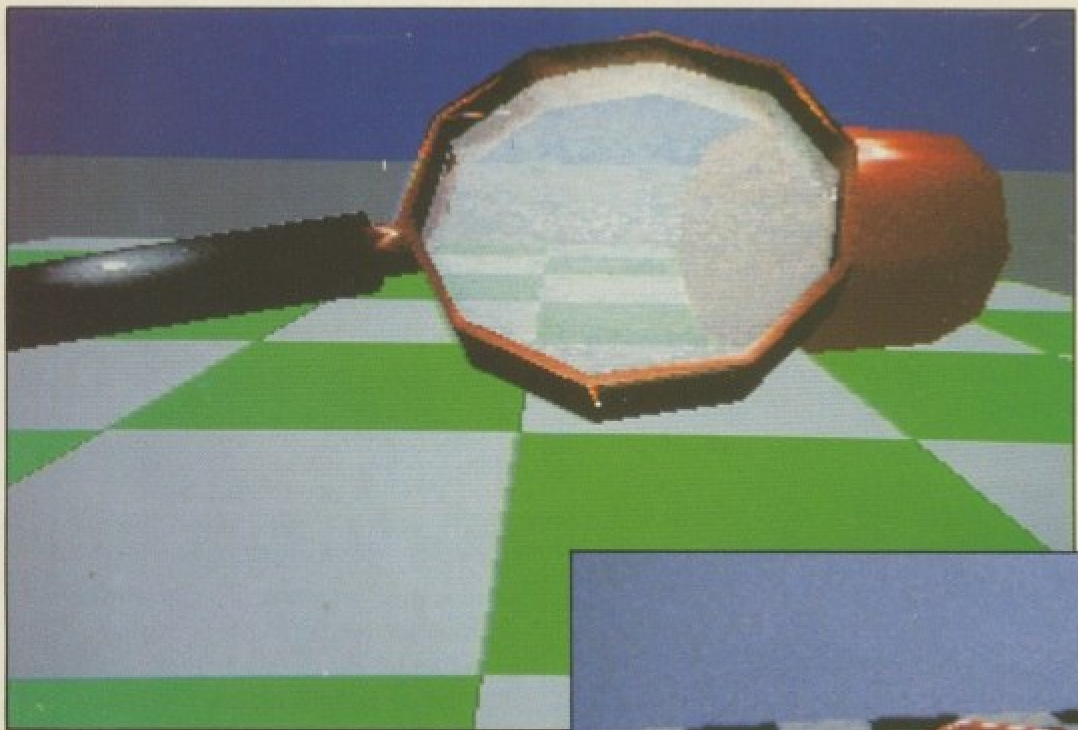
## RAY-TRACING

**Advantages**

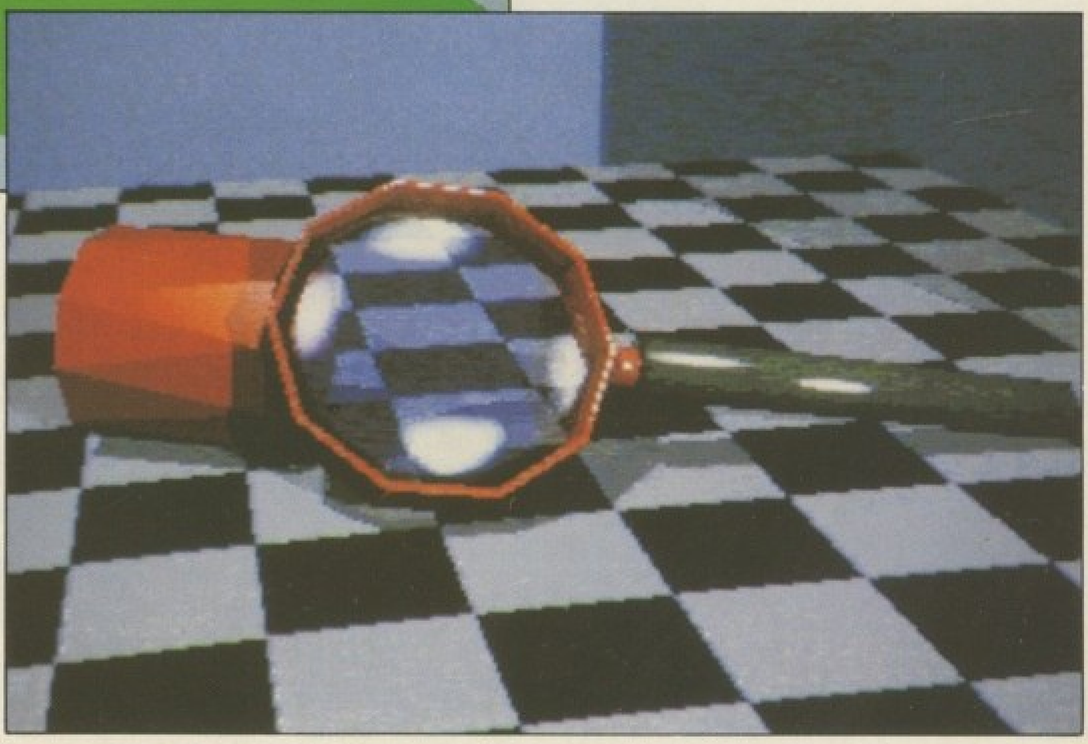
- The effects of reflection and refraction are taken into account.
- Lighting from one or more sources results in realistic reflections off surfaces.
- The lighting model includes shadows. These are correctly cast and can be from one or more sources.

**Disadvantages**

- The most noticeable feature of most ray-tracing programs is that they take an excessive length of time to do their work.
- It is difficult to write a fast ray-trace routine.



*VideoScape II using its HAM mode can fake glass*



*Sculpt 3D Produces the best results. This took 17 hours*

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# AMIGA Letters

## Software failure

I FEEL I must write in to correct an error which appeared in the Assembler tutor in March's issue. Mr Rupert Goodwins refers to the 68000 instruction MOVEQ which he incorrectly states moves an immediate number of value 0-7 into a data register. The number range is of course –128 to 127 IE – a signed byte, not an unsigned nybble.

I work as a software engineer programming in Fortran and Z8002 assembler, and as a professional I am bemused at the current fashion of "Basic bashing" in favour of C.

I seem to remember the same sort of thing happening in the early/mid 80s with Forth. Anyone remember Forth? Languages come and go, but Basic and Cobol remain, so don't knock it guys.

I do not own an Amiga but am seriously considering buying one and have a couple of questions. 1, What is the difference between an Amiga A2000 and an Amiga B2000? 2, What are the advantages of owning the 2000 instead of the 500.

I intend to add a modem, another 0.5 – 1.5 meg memory and add at least one extra disc drive. As I see it, I could buy these extras with the 500 and pay about the same as I would have done for the 2000.

Having said that, I have an unexpandable C 64 at home gathering dust. OK its storage is expandable but not performance, and I don't want to fall into the same trap with the Amiga.

**Roland Casewell, Birmingham.**

*Forth is still alive and living in Fulham. We don't think that C will disappear, and suspect Cobol will only live as long as the need to maintain existing programs.*

*The B2000 has superseded the A2000, although the front of the box still says A2000. The B has a full megabyte of ram on the main board while the A has half a meg on a card. This means that you have one less slot on an A, but upgrading to 1.5 meg is just a matter of plugging in extra chips.*

*The B2000 has a composite video connector, the A2000 doesn't. Amiga B2000s run slightly faster having zero wait state ram compared with the A's one wait state. The enhanced chip set won't work with A2000s.*

*Buy a 2000 if you are likely to expand your system. Commodore has stated an intention to provide upgrades for the B2000 so that whatever hardware comes out for the Amiga, and whatever it does in terms of new Amigas in future years, B2000 owners will be able to upgrade by slotting in a card.*

*Hard drives for the 2000 can run faster and are cheaper. Ram expansion beyond 1 meg is easier. A video slot allows special peripherals like programmable genlocks and flicker fixers to be used.*

*The most important advantage is the ease with which you can add a faster processor. Commodore's A2620 costs £1,400 and speeds the machine up around four times. Expansion on the A500 is possible, but it is nowhere near as easy. There are are no internal modems for the A2000 but you might be interested in adding a serial card.*

## Digitise and emulate

I HAVE been using an Amiga A500 for quite a while now. My dad is a professional programmer and has told me how to write in C and Basic, the latter not being of any use for programming. I own Photon Paint and I am producing quite good pictures.

I am starting on my first game and need a video digitiser. I cannot afford one so I was wondering if it is possible to hire one for a fortnight or so.

Is there any way I can obtain compatibility with an IBM PC? All I need to run is WordPerfect 5.0 and Procomm. If this is not possible, is there a viewdata/split baud rate/ MicroLink-compatible terminal emulator.

**Nicholas Loman, Brighton, East Sussex.**

*We are sure Mr Casewell would have something to say on your views of Basic and C. While it is easy to hire a video camera from a local television shop, we don't know of anyone who rents out digitisers.*

*Try your local Independent Commodore Products Users Group (ICPUG), someone there might be able to help. Biggin Hill is the nearest branch, call John Bickerstaff on 01-651 5436 after 8.30pm for details. If you do hire a camera make sure it has the right outputs, normally composite mono.*

*Commodore has The Transformer which offers a degree of PC compatibility but WordPerfect 5.0 is a big program, it may not fit in a 1 meg Amiga with the Transformer and even if it does it is bound to be disgustingly slow.*

*A better solution would be to buy a proper copy of Wordperfect 4.1 for the Amiga and a copy of Dos to Dos to read IBM discs. The Ruby comms software does all you want, contact Y2 on 0923 50161.*

*Write to: The Editor, Amiga Computing, 78-84 Ongar Road, Brentwood, Essex, CM15 9BG. We'll send the writer of the best letter each month a program from our goodie drawer.*

## Infected

IF by some unfortunate circumstances I get the dreaded Byte Bandit virus, how would I get rid of it? Your answer to this question may be to use a virus killer, but if the Byte Bandit virus affects all discs put in the internal disc drive, wouldn't it infect the virus killer disc?

As I use the Scribble! word processor I would like to know how to print in colour. The printer I have is the Star LC10 colour.

**R. Fernandes, Thornton Heath, Surrey.**

*Even if the disc with the virus checker becomes infected it should still be able to repair itself. It is worth noting that viruses only become active when you start up the system with an*

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*infected disc.*

*Use VirusX, which is available from most public domain libraries, it can be run at the same time as Scribble! and so check every disc you use automatically.*

*To use the LC10 in colour mode select the JX80 driver from preferences.*

## Colour confusion

I HAVE an Amiga 500 with 1meg of memory and a second drive. I want to buy a colour printer, but I would like a good one. I am willing to spend up to £500.

I heard about a colour printer at £120, the Okimate 20. What I would like to know is how good is it and could I get a lot better for under £500.

**Richard Roberts, London.**

*Unless you are prepared to spend thousands of pounds the output from colour printers is disappointing. Ribbon type printers, which are the cheapest to run, give the poorest quality. The Oki gives goods quality and is cheap but it is very slow and expensive to run.*

*Ink jet printers offer the best of both worlds but fall outside your budget. For more details we reviewed the Okimate 20 and the Star LC-10 colour printers in the July 1988 issue, and the Citizen HQP-40 in January. Back issues are available for £2.10, contact the mail order department on 051-357 2961.*

## Poke problems

I'M going crazy. I have been trying for days now to use the cheat pokes you so kindly publish for those of us who would like to see what the screens on many of the games look like, the screens which are beyond some of our playing capabilities and skills.

But I cannot get to grips with my machine. Do I need some kind of magical hardware device to enter these pokes or can you enter them using the Workbench 1.2? If so, please explain in detail or write to me in person because I'm itching to use them – I have so many lying around.

**Peter Jackson, Tyne and Wear.**

*You need to type the program into Basic from the Extras disc which came with the machine. Save the program, check it very carefully and then run it. If you have problems see if you can find someone who knows Basic and get them to help.*

# AMIGA Letters

## Under control

I HAVE built a small robot and control circuit at home and want to connect it to my Amiga 500. All I need are five output lines, three input lines, a ground line and a +5 volts line. I would like to know how to connect it and how to control it. Would I use the expansion socket? All information gratefully received.

**Alexander Kerr, Downton, Wiltshire.**

*The parallel port provides all the signals you need, but the poor little power supply can't cope, so use a battery for power. You'll still have control if you use a common ground. The parallel port has a programmable CIA.*

*Your best bet is to buy a copy of the Commodore/Addison Wesley Hardware Reference manual £22.95 from 16 Bit Software (0706 43519). Ignore comments about waiting for an updated version. It is still being proofread, so is some months away. Even then wheels at Addison Wesley UK grind so slowly it will take ages to make the trans-Atlantic hop.*

## Listen up

I WAS wondering if there are any non-Midi music packages, in which you enter the music in stave form, and the sound comes straight out of the monitor/speaker itself without the need for extra hardware? I am looking for a reasonably sophisticated one.

**Ben Jacobs, London.**

*Try Sonix from HB Marketing 0895 444433*

## Sprechen too soon?

REFERENCE the article written in March's *Amiga Computing* by Max Tennant – Sprechen Sie Amiga – just who the hell does he think he is? Am I right in saying the Amiga developers' conference was held over a couple of days? If so, how can he fully appreciate what a country has to offer from the inside of a hotel conference room?

I presume none of the developers brought any games with them for Max to play so he got the hump, resorting to slagging off the country.

After all he can't lay into the conference members, they wouldn't let him back in again would they? Then where would he go for a nice little break?

I spent nine and a half years in Germany – no I wasn't in the Forces – and I can therefore categorically repudiate his allegation that it is the second most boring country in Europe. Belgium isn't that bad either.

If he'd spent more than a few days in the place he would have found that out for himself. I trust he has been to all the other countries in Europe to help qualify his opening paragraph.

I should think Spain rates highly with him as it will remind him of the excitement and fun he has all the time at home, he's not too old for Club 18-30 is he?

Max's article was severely affected by his boredom as well. After you remove the opening waffle, the CV's of assorted Commodore people, the press handout from Commodore Engineering you're not left with much really. Perhaps it would have been better to have Jez San do the report and let Max take the photos. I've heard there is nothing better than an F-stop or two to relieve one of boredom.

On a more personal note, I offer my apologies to you Max if I have offended you but like you (I hope) I believe in the right to reply. I think I am replying for those readers (mainly from Germany and Belgium) who do not share your views. Anyway, hopefully others will write in on this subject and we can get away from the tedious ST v Amiga debate. Now that is boring.

Right then, I shall step off my soapbox and crawl back under my stone and leave you with the following bastardised title from Elvis Costello – Max mentioned one of his songs elsewhere in the same issue – that would seem rather apt for Mr Max Tennant: I Don't Wanna Go To Frankfurt!

PS: It's spelt Lederhosen, A rough translation of your spelling is "unfortunately trousers". You weren't that far off the mark.

PPS: It's called Leberwurst; at least you know a Porsche though.

**Colin Robertson, Nr Spalding, Lincs.**

*MT replies: I've been to Germany three times, and if I don't go back I won't be sorry. I have to admit that I*

►

# AMIGA Letters

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*wrote the line: "The most boring place in Europe" hoping for a letter like yours. Thank you, you've made my Thursday. (I think he should also admit he stole it from a car magazine – no wonder he got the Porsche right – Ed).*

## Getting bigger

FIRSTLY, what is a hard drive? and what do the terms preformatted, with controller and hard card mean, and what are the average prices?

Secondly, how can I upgrade my A500 to 2 meg, where do I go and how much will it cost?

Thirdly; I know you have published one of my letters but please, please, please with a big fat cherry on the top could you print this one. Thanks chuck.

**Calvin Darren Ward,**
**Redcar, Cleveland.**

*Firstly, a hard drive is a disc drive where the disc cannot be removed. It is sealed in a vacuum and spins very much faster than a floppy disc. This means it can store a lot of data, typically 10 to 100 times more than a floppy. You need a controller to connect a computer to a hard drive. These are sometimes sold separately, a set-up which best suits Amiga 2000 owners who will plug the controller card into a slot inside the machine and scout around for a good deal on the drive.*

*Getting all the bits to work can then be very difficult. One of the jobs you need to do is format the drive, in the same way as you would for a floppy. Preformatting saves time. A hard card combines a controller and a drive on a card which can then be plugged into an A2000 slot. Drives range from £499 to £1,000 plus*

*Secondly, Amiga Centre Scotland (031-557 4242) has a 2 meg expansion which will take your machine to 2.5 meg. This will set you back £575*

*Thirdly: no*

## Stale discs

CAN you enlighten me as to what a Diskdoctor is, and what it does, and what does "Disc not validating", mean, as I can find no reference to these things in my manual?

**K Murray,**
**Luton, Beds.**

*Diskdoctor is a program which resurrects dead discs. It checks a bitmap which shows which areas of the disc are used and which are free for writing to by running a program called Disk-validator in the L directory. If this is missing or not properly assigned you will get a disc not validating error.*

## Map reading

I JUST cannot seem to get the required SetMap, hard as I try. The problem is that some keys do not show the symbol or character printed on them – when I press the @ key I get " instead and when I press the £ I get #. I've tried to change the SetMap but I just cannot get anywhere. Can you help?

**K Banks,**
**Frustrated of N16**

*The line* System/setmap gb *in your startup sequence should fix the problem.*

## All aboard the Skylark

AS I do not have access to a telephone on board ship it would be very much appreciated if you could tell me how I can get in touch with Microtext by letter.

As the owner of an Amiga 2000 as well as an occasional reader of *Amiga Computing* (very few newsagents where I am) I am looking to expand my system by buying an Amiga teletext adaptor.

**C W Pollard,**
**Oslo, Norway.**

*No prob, Microtext is at Dept AG, 7 Birdlip Close, Horndean, Hants PO8 9PW. Mention us when you get in touch.*

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Surely it is up to the producers of the product to clearly mark on the packaging exactly which models of the Amiga the program will work on.

We accept that piracy is a huge problem, despite what some people say, and we are sure that we lose money ourselves that way. However, we still believe that if you have paid for an item of software you are entitled to make a security backup of it.

At least Precision Software has the decency to provide a dongle with SuperBase, letting the legal user make the much needed and required backup.

I must admit that at times I do get a bit peeved off at the fact that I have to search out a manual for a program just to enter a password from it, but then again I know that this is a good, but not failsafe, way of preventing piracy (ever heard of photo-copiers?)

**D I Robertson,**
**Tooting, London.**

*The idea that users have a right to make back-ups is a fallacy. It is the case in the US, but not here. By copying a protected disc, even for your own use, you are breaking the law. The* Amiga Computing *preferred method of protection is manual style, because you can only have one dongle in at once, a real restriction on a multi-tasking machine.*

*Software companies which produce programs incompatible with some machines are just plain daft. Commodore allows registered developers to visit and try out the programs they are developing on a range of machines. With the advent of Workbench 1.4 this will be very important.*

## Wider view

I REALLY enjoyed Phil South's review of Zoetrope in your April issue. I have also heard that the American artist James Sachs has used the program to produce some television advertisements for the Mattel toy company so I'm really keen to get my hands on a copy.

But there is a little prob. I need a version which supports a full PAL 256 line display. I understand that a program like Zoetrope eats chip ram the way Ben Elton sells books, but am prepared to get the Enhanced Chip Set if necessary.

Do you know anyone who could customise the program to work on a PAL screen?

**Steve Williams,**
**Twickenham.**

*Panic not, we called ISM (0983 864674) and they say they have had the program adapted and it now supports PAL properly.*

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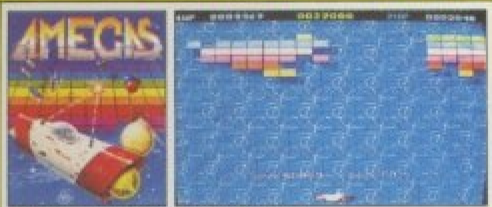
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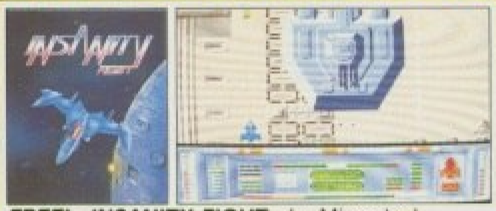
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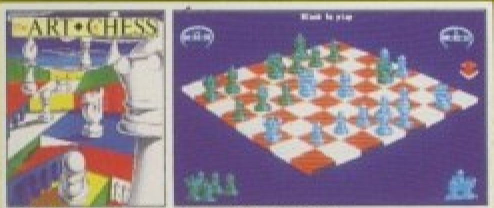
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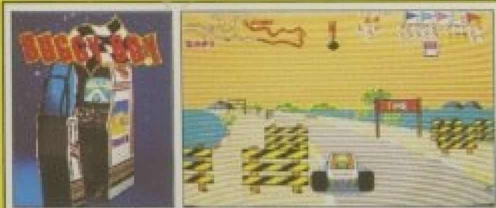

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